MANUAL TRAINING MAGAZINE

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VOLUME XIV
1913

PUBLISHED BI-MONTHLY
(No Summer Number)

The Manual Arts Press
PEORIA, ILL.

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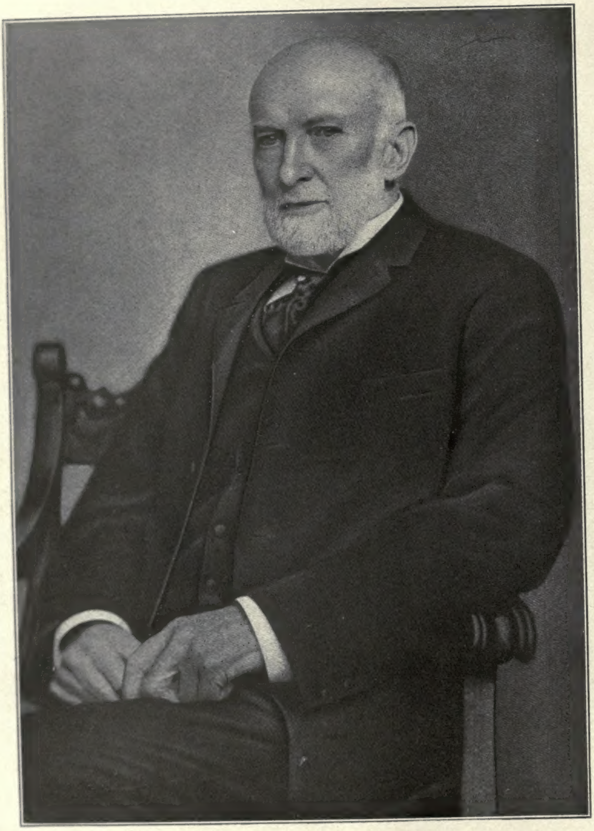
(Names of contributors of articles are set in SMALL CAPITALS. (E) indicates an editorial. (C. I.) indicates "Current Items".)



SAMUEL CUPPLES.

(See p. 46.)

VOLUME XIV NUMBER 1

I.

MANUAL TRAINING MAGAZINE

OCTOBER, 1912

ART EDUCATION.
RETROSPECTIVE AND PROSPECTIVE.

William A. Mason

A LATIN author writing over a thousand years ago said: "The times change and we change with them." This declaration of growth or admission of readjustment to a changing environment by this worthy Roman has a genuine, modern ring to it. Yet it would not be at all surprising to find after all that in reality he was, or had been, quite a conservative in his day. Most Romans were, until it was too late to be anything else. Indeed, we find today that most successful people who are progressive and up to the times were conservative first before they learned how to develop out of their conservatism. Possibly it had been noted as early as this author's day what the physiologists have long told us about the body being wholly renewed every seven years. Whether this is scientifically true or not we will leave to the scientists to decide. It is a time-honored period anyhow; and we assume that the statement included the mind as well as the body. To young, impatient youth this uncertain cycle seems an age. He would like to discount it at least one-half and even then to gamble in futures over it. It certainly is long enough for the inexperienced beginner, whether an art student or any one else, to make many mistakes due to his impulsive optimism, and almost too short for wiser heads thoughtfully and seriously to try out newer ideas and advanced methods demanded by the changing times. Just about five of these cycles have transpired during the past generation and we older heads looking back over the educational advancement of our times have to ask ourselves the question: "Have we changed commensurate with the times?"

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Let us for a moment turn over the pages of our drawing record-book back to the early beginnings of the study and recall the methods of instruction of that day. When the introduction of drawing into the public schools of this country was first advocated somewhat over thirty years ago, it was wholly on the plea of its practical value in benefiting the growing industries of the country that it was adopted, and as "industrial drawing" it took its place in the curriculum. Its foundation was geometry. Its method was over-scientific and analytic, and its expression was formal, stiff and colorless. The pedagogical assumption underlying the work in its beginnings was that the young pupil was not able to draw anything until he had mastered the alphabet of drawing by a laborious drill on lines and plane figures of all possible shapes and in all conceivable positions. The person who paraphrased the saying "Nothing succeeds like success" into our present watchword: "The best way to learn to draw is to draw" had not arrived. But be it said for our teachers of drawing of that period that that was the day of alphabetic analysis in language study that preceded phonetic reading. The pedagogy of that day had not advanced to the knowledge of the psychological fact that the young, impressionable mind of the child visualizes a word in its entirety, and, providing the alphabetic elements are not too complex, recognizes its form as a picture, *en bloc* so to speak, as he would recognize a friend's face or any other concrete object. This analytic point of view naturally was imposed upon the teacher of drawing. He made the same mistake, only a far more fatal one in drawing, of ignoring almost wholly at the outset the element of perceptional training gained thru the observation and drawing of concrete objects, and drilled primarily on linear execution. The hand was trained at the expense of the eye. Manual skill far outran visual insight. The result was considerable mechanical excellence, but little or no real art appreciation as we understand it today. The linear treatment permeated every phase of the subject. The designs were linear, ofttimes with little regard for potential color areas; the drawing of plants resembled crimped wire designs; and the drawing of objects, when not copied, was flat and dead and deserved the classification "still life." One word serves to characterize any exhibition of drawings of that day,—colorless. Moreover, the broader and wider interests of the subject in the way of training in esthetics thru all forms of nature drawing and its application, color study and its application in design, the study of art masterpieces and other art implications now included in our sub-

ject, were hardly visioned at that time. It was the drawing teacher's place to teach industrial drawing and he did his duty thoroly according to his light. Those of us who remember the work of that day must admit that a very high degree of skill of hand was attained by a large proportion of the pupils. If artists or artistic pupils were not developed at least many went out from the schools possessed of considerable technical skill.

Now, wherein have present day methods improved upon those of the past? Unquestionably in many different directions. It has long since been recognized that the past dry, skeletal method of analytical drawing was pedagogically incorrect not to say unsatisfying and uninspiring. The child asked for bread and he was given a stone. Manual dexterity at all cost was formerly the primary aim. Esthetic insight languished. Nature, the child's birthright, was a stranger in the school room. It was a thing apart, to be enjoyed only out of school hours, providing any time at all could be found for it. If we have done nothing else in our present day work we have conferred a boon upon the child in bringing so much of nature into the school room and basing our study upon nature instead of the abstractions of geometry. * * * We owe it to the children whose destinies are in a measure in our hands, to the parents who deliver them into our keeping, to the school boards that pay us for our leadership, and—what we do not sufficiently think about—to the community, that the united efforts of all of us living within its bounds are striving to develop, to see to it that the course in drawing shall meet every demand that the needs of the present day may lay upon it and to purge it of every adventitious exercise that may rob the subject of its high value in producing useful, efficient citizens.

CULTIVATION OF GOOD TASTE.

The intellectual demands of the day most distinctly require a higher art appreciation in almost every phase of living and the cultivation of better taste in the appointments of the homes, the buildings and the surroundings of the city. We have responded to this demand and the schoolroom has been flooded with flowers, landscapes, figure drawings, the world's masterpieces, many of the latter happily finding their places in the school readers so that the great artists are becoming as familiar as the great writers,—and why should they not? All this is most encouraging. Everybody likes it, most of all the pupils themselves, and

it is having an uplifting effect upon them. But there is a danger and, I believe, a tendency of carrying the picture making element too far in our work. Its educative value up to a certain point is unquestioned. Probably there is no other exercise in drawing more valuable in training in the proper functioning of eye and hand than object drawing. But it can be carried to an excess in the direction of picture making, with its too inviting accompaniments of light and shade and color values. This may be legitimate work for the higher schools for the comparatively few pupils who enter them. But we who have the rank and file of the great mass of pupils below the high school to instruct must consider the sum total of our obligations towards those in our keeping and their future position in the community. It is a very complex age in which we live and it is becoming more and more so with every decade. Never before has there been a time when there were so many interests to reconcile in our educational courses. Never before too were there greater opportunities for the pupils going out from our schools to enter the large industrial establishments of our cities to engage in constructive pursuits where technical skill in mechanical and artistic operations is required. The question which we have to ask ourselves is: "Are we turning out from our eighth grades pupils possessed of sufficient manual skill successfully to enter upon such prospective employment?" Generally speaking I fear not. I do not think the pupils of today possess quite so much pure mechanical skill as formerly, tho they have better insight and are far more artistic in their perceptions and in their handwork. This is a gain to be gratified over, but not to be satisfied with. We intend to put a peg in here and hold on to the gain but to advance along other lines. There is need on the part of us all, but I speak more particularly of the teachers of art, to recognize the complexity of the problems before us and rationally to adapt the course in drawing to the changing conditions of the times. This is largely an industrial age, calling for manual skill and constructive ability. Only ten per cent of the pupils entering the primary school ever reach the high school. The industrial ranks are recruited almost wholly from those pupils whose education ends with the grammar grades. These pupils require a definite preparation for their prospective vocations. While maintaining as far as possible our high, artistic standards, we must recognize that there should be in our courses of study much that makes for real disciplinary manual skill, somewhat comparable to the definite problems soon to be faced by these

pupils. The indiscriminate drawing of flowers, landscapes, the posed figure, still-life groups, and such interesting and artistic exercises, dear to the heart of every art teacher, are valuable only within reasonable limits. It must frankly be admitted that some of this work is beyond the capacity of many of these pupils. It must not be carried too far. Other exercises more practical must share the time with them. We must remember that our aim is not to turn out working artists but artistic workmen. Furthermore, the art teacher must not live unto himself alone and keep drawing a thing apart from the daily life of the child. He should be alive to the school, home, and community interests of the child. He should take excursions into other fields. Museums, picture galleries, collections, city institutions, industrial establishments, should be visited by the pupils and essays be written about them. The succeeding drawing lesson should be a cover design for these essays, each one an original arrangement. In the planning and execution of the lettering, the border and the simple, significant illustration or decoration, if any be employed, will be found one of the very best drawing exercises that the average pupil—and there are a good many of them—can be given. It involves the exercises of restrained taste and comprehensive planning with definite, ordered spacing and skillful, artistic rendering. We must have more good lettering and less poor painting.

ART AND MANUAL TRAINING.

It is incumbent upon the teacher of drawing more fully to coordinate and correlate his work with that of the sewing and manual training teachers, as well as with every other educational agency within the school. In the subject of decorative design this is most essential. We should have done with so-called pure, abstract design. Whatever is done in this line should be practical. It should as far as possible be applied in some real, concrete problem. This vitalizes the subject and makes it worth while. When girls find out that they can easily learn to stencil in colors on fabrics, making window curtains, cushions, etc., design takes on a new meaning for them. The pupil immediately discovers when he works in concrete materials that he cannot proceed whimsically, riotously, with lax restraint, in the flamboyant style native to the average school child; but that the physical limitations of the surface, the compelling influence of the contour lines and the purpose and use of the object constructed and to be decorated impose definite, structural conditions upon his design that cannot be overlooked nor violated.

In these comparative exercises involving manual training and drawing it will be discovered that the constructive work will react with beneficial results upon the art of design.

There is as urgent a demand for reciprocity in the affairs of the republic of the classroom as in the affairs of nations; and if we desire in the future to make the subject of drawing the able handmaid in the school that it ought to be, we must from now on recognize its interdependence in the curriculum. It is a means to an end, not an end itself. We are not to teach art wholly for art's sake; but for nothing under the sun than for the child's sake. We haven't yet found out just what that desideratum is to be, but we should strive so to do. We should neither deny the pupil the benign influence of art nor shoot clear over his head and altogether miss him by our too high aim. We should ever bear in mind the significant, the momentous fact that the pupil in the grammar grades is only a very few years—many only a few months—off from some vocation, and every drawing lesson should help to establish some habit of mind or motor activity that will be helpful in this vocation. The problem is neither simple in its proportion nor easy in its solution. No one has solved it yet. The end and aim of the instruction seem to be complicated by the diversity of individual interests. To an extent these always existed but were not considered nor provided for. New conditions seem to confront us as we proceed. For example, somewhere out of this modern school organization have suddenly appeared the backward, delinquent, disciplinary, and other special classes of pupils. Whether suspected before or not, they are now organized and require their own courses of study adapted to their peculiar needs. It should be more largely instrumental and still more closely correlated with the course in manual training. The chief problem of the future then for the art teacher seems to be to reconcile and harmonize all these conflicting interests; to decide upon the irreducible minimum of pure artistic training that every pupil leaving the public schools should have as a basis for manhood, culture and refinement, and facility of hand that will serve him in any future walk of life.

ORGANIZATION FOR TEACHING EFFICIENCY.

But in any event, whether our courses in art ought to be less or more artistic, whether they should be dominated from the purely cultural point of view or from the vocational standpoint, we need to have

our schools more thoroly organized on the highest plane of teaching efficiency. We should apply the principles of the successful business and industrial establishments to the managements of our schools. We need some Fred Taylor to show us how to secure the maximum amount of efficiency in our corps of instructors. In one matter in particular I am convinced that the efficiency expert would agree with some of the foremost educators of our day. We employ special teachers of sewing, cooking and manual training who teach the pupils these branches in the classroom; but the grade teacher is expected to teach all the subjects under the study of drawing, whether representative, constructive, or decorative. In this age of differentiation of function this proposition is almost untenable. It is fine in theory but it does not work out in practice. It is a good basis to depart from but not always to adhere to. As we drawing teachers ourselves very well know there are many grade teachers who have not and never will have the slighest conception of what drawing is or ought to be. There are a great many others who teach the subject only indifferently well. The pupil's time is all but wasted in their rooms. The system should be flexible enough to permit that such teachers should be relieved of this study and their classes placed in the hands of teachers more competent in this branch.

Nine years ago Dr. Butler of Columbia University spoke in these warning words before the National Education Association:

> After a child has been in school for four or five years he is brought by the course of study to the point where the subjects begin to divide. They begin to take on separateness. The pupil comes in contact with the higher reaches of knowledge, and no person short of a genius can command the scholarship to teach wisely and economically the whole series of subjects which are represented in the upper elemetary, or grammar, grades. To prepare teachers adequately for the work now required of them in these grades is an absolute impossibility. We need, first of all, so to rearrange our work in those grades, and so to readjust the teaching of the subjects there, that we can command better scholarship. We cannot do this until we divide the subjects among several teachers.

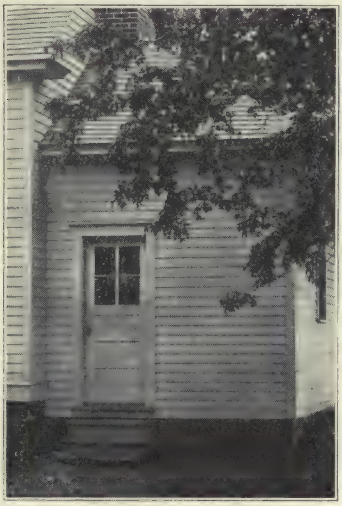
We teachers of art know better than any body else that there is not, as Dr. Butler intimates, enough time to be found in the Normal School adequately to prepare every teacher successfully to teach our branch in the elementary grades. We realize more keenly than any body the truth of our poet's words: "Art is long and time is fleeting." If we would increase the efficiency of art instruction in the elementary grades in the future, we should adopt the departmental system of teaching this subject in the higher, if not in the entire, grammar grades. Wherever this

obviously more efficient method of instruction has been tried, at least within my own experience and I believe it has been the verdict of everyone, it has resulted in a decided improvement in the work. The arguments in favor of the general proposition are of course too self-evident to be seriously controverted. I believe no one undertakes to deny them. But many seem to see insuperable, concomitant disadvantages in its introduction that will affect the general welfare of the schools. But it must be conceded that anything that makes for better and more efficient instruction in any branch should be welcomed and reconciled at almost any cost. It will probably soon be found that the original cost was trifling as compared with the future gain.

Briefly to recapitulate then, the problems that confronted the teacher of art in the past, as we have noted, were comparatively simple. The educational outlook as far as art education was concerned was limited. The purpose very vaguely apprehended to teach industrial art in the schools led to mechanical processes which dominated the instruction. It became industrial—whatever that meant—without being artistic. The term "applied art" was popularly used in connection with some of the exercises in design, but as no material whatever was used but the drawing paper, the designation became rather a travesty. It was like the play of Hamlet with Hamlet omitted. Following this stage at a later date came a natural revulsion from this mechanical method and a period of bold audacity in fine art was ushered in which is only just closing. The proverbial pendulum which appears to beat time for our educational movements must have beaten all former records in its wide swing away from the normal. Painting pure and simple—the unadulterated Simon-pure article—was taught to babes and grown-ups alike, from the kindergarten to the high school, as tho all were to become painters. Under this influence thousands of embryo artists applied at the doors of our academies of fine arts only to discover later on that their superficial education had fitted them for neither the arts nor the industries.

We are learning to do better now. We are, I trust, making an earnest endeavor to reconcile the mechanical and the artistic elements in our work. Neither should be over-looked; neither should be over-forced. They wait upon each other. No true problem in applied art worthy of the name can be carried out without the underlying elements of geometric construction. Then too, the introduction of concrete materials into the schools, as textiles, fabrics, leather, wood, copper, etc., have given to design a new content and meaning not recognized before.

In the presence of the concrete material itself we discover that the appropriate design arises out of the object, its purpose and shape, rather than being applied to it. Academic design fails when we face these practical problems. So the teacher of drawing should welcome the introduction of these materials into the classroom. He should extend the glad hand to the manual training teacher. They are both working for technical excellence; and no form of school correlation in the future can better make for the welfare of the pupil than that which should obtain between these two teachers. By their hearty cooperation, I believe, school life for the pupil will be made more interesting, more inviting for its longer continuance, and a larger proportion will be better prepared to take a higher and more respected position in the community than at any time heretofore.



ADDITION ON RURAL SCHOOL FOR MANUAL TRAINING ROOM, BUILT BY STUDENTS, SPRING VALLEY, MINN.

FIG. 1. FIRST B. GRADE AT WORK. MODELS SHOWN WERE MADE THE PREVIOUS TEN WEEKS.

WOODWORK IN THE LOWER GRADES.

L. L. SUMMERS.

DURING the past few years a great deal has been said about the value of industrial education and there has been not a little criticism concerning the failure of manual training. Manual training is not a "cure-all," especially when taken in such small doses and at such wide intervals. Two hours a week for the seventh and eighth grades is about the average time. This is one hundred and sixty hours in two years or sixteen days of an apprentice's time.

We think we have manual training in our schools but as a mattter of fact this is not so. Some of our larger cities of five thousand population and over have manual training in the sixth, seventh, and eighth grades and the first two years of the high school while almost all of the smaller cities, all of the villages and country schools, and the first five grades in the larger cities have little or no manual training. How much manual training are we giving to the quarter of a million boys and

girls who drop out of school each year before they finish the sixth grade? It is this quarter of a million which is most in need of industrial education for they eventually will form the lowest level of society.

It is not a difficult thing to say what should be done but quite another thing to tell how it can be done. If we wish to teach a child

FIG. 2. SECOND A. GRADE, SHOWING TEACHER AND THE PUPILS AT WORK.

to read we must have a trained teacher and set apart a portion of each day for this instruction. If we wish to lay the foundation for industrial occupations we must have trained teachers and begin this work the day the pupil enters school. Certificates of graduation from our Normal schools must include industrial training and teachers now in the service, not having had this training, should be required to attend summer schools. Industrial work started in the kindergarten should be continued during the entire public school period and should be regarded just as fundamental to every child's education as reading. During the first six grades, industrial work including drawing and physical training should require at least one-third of each school day and beginning with the seventh grade, for boys and girls electing an industrial course, one-half of each day should be given to this work. These industrial courses

might end with the close of the second year of the high school and diplomas granted to pupils finishing them.

The above is written as an introduction to a description of an experiment which has been made during the past seven years at the Oshkosh, Wisconsin, State Normal School.

FIG. 3. SHOWING THIRD B. GRADE AND THEIR WORK OF THE PREVIOUS TEN WEEKS.

WOODWORK FOR VERY YOUNG CHILDREN.

One cold winter day about seven years ago I found a little kindergarten boy standing outside the school building, and in reply to my question he said he was waiting for his sister. On inquiry I found that he did this every day, so I arranged with his teacher to have him wait in the manual training room. It was a very natural thing for the boy to want to do something, so I gave him some narrow strips of soft wood and showed him how to make a ladder. He did so well with this kind of manual training that I asked permission of the president to make an experiment with an entire first grade class. This proved as satisfactory as the work with the little boy, so the following year woodwork was put into all of the grades beginning with the first.

The simple benches constructed by the seventh and eighth grade pupils have proven to be very satisfactory. These are shown in Figs. 1 to 4. The tools used are the hammer, ten-inch back-saw, rule, try-square, knife, sandpaper, and file.

The first year we used common pine laths but these did not offer

FIG. 4. FOURTH B. GRADE PUPILS AT WORK. SHOWING THE WORK OF THE PAST TEN WEEKS.

variety enough so we began to use basswood surfaced two sides to the following thicknesses: one-fourth, three-eighths, one-half, and three-fourths inches. For most of our work we use material three-eighths of an inch thick. This is ripped at the school to any desired widths and is given to the pupils in pieces from three to four feet long. By accident we found that cigar box nails are better adapted for the use of young children than brads.

It will be seen that the equipment for this work is very inexpensive and the material used in the first four grades will not average more than fifty cents a pupil each year.

At our Normal school the children are taught by the students who have previously had ten weeks of manual training instruction and their teaching is supervised by the head of the manual training department.

WOODWORK AND NUMBER WORK.

The models made by the pupils in the first four grades are varied and interesting and an effort has been made to connect this manual training with the other school work. For example, all of the number work of the first and second grades is taught in an applied way as a part of the manual training. We have no trouble in so arranging the projects that it is possible to give the combinations in a logical order and at the same time to allow the child to discover them. The pupils have very little difficulty in retaining these combinations for they are not only able to hold them in the memory but are able to see how they look on the rule. To illustrate: We may have, in making a bird-house, boards seven inches long and five inches long. After squaring the end of the board the pupil is asked to measure seven inches on the board and mark with a dot. He is then told to measure five inches more without moving his rule and indicate by means of a second dot. Next he squares the board thru these dots. After sawing off both boards he verifies his results by measuring the second board. We let the child discover his mistake when he makes one. Following this plan the pupils use all of the combinations a great many times during the first two years. We make use of the nails driven into the models to count by twos, threes, fours, etc.

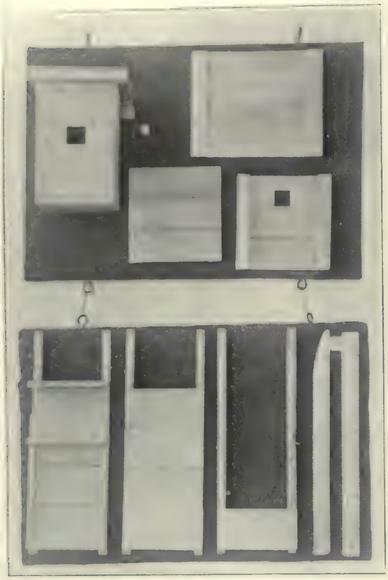


FIG. 5. STEPS SHOWING THE CONSTRUCTION OF THE SLED, A FIRST GRADE MODEL. THE BIRD HOUSE IS A SECOND GRADE MODEL.

During the first and second years the pupils have rather a wide experience in applied number work and are able to absorb more real arithmetic than is usually taught following the old method. The use of the rule in connection with the things constructed gives the child an excellent foundation for his later work with fractions. I frequently have such answers as this from little first grade pupils. This board, or

whatever the pupils happen to be measuring, is six inches and a half and a quarter and a half of a quarter. This is simply giving an illustration of how easy it is for the children to see fractions. It is just as easy for them to find one-half of their foot rule, one-quarter, or one-

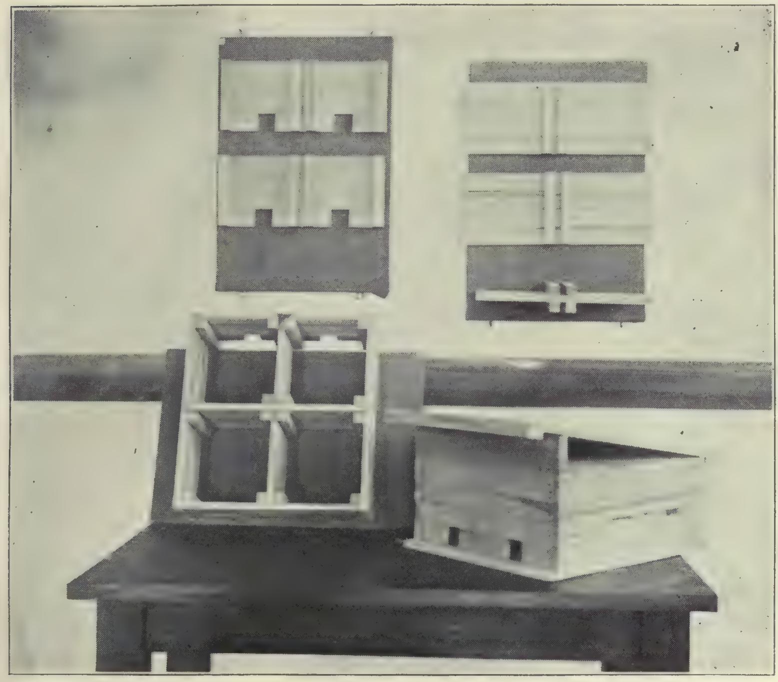


FIG. 6. SHOWING CONSTRUCTION OF A MARTIN HOUSE. THIRD GRADE MODEL.

half of a quarter. In this applied way the pupils of the higher grades can be taught to add, subtract, multiply, and divide fractions as easily as they ordinarily do whole numbers. I firmly believe that the number "bugbear" which works such havoc with so many little children is the stumbling-block, which the methodical pedagog, in the form of an unreal, uninteresting, incomprehensible book, has put into the hands of immature little children. If the best plan should be followed, no book on arithmetic whatever would be put into the hands of any pupil before the fifth grade, for up to this time all of the number work can

be taught a thousand times better in an applied way and all of this time saved for industrial training which includes the number work.

PUPILS INTERESTED IN THE WORK.

The children are very much interested in making tools and apparatus which they use in their manual training and other school work. In both the first and second grades we make looms which are quite as satisfactory as any we find on the market. After using the loom it becomes the property of the pupil and is taken home.

The germinator is a very useful model. After it is made the pupils paint it with asphaltum to keep the water from warping the boards. It is filled with moss or cotton and the seeds are placed on top of the moss and under the glass. This makes it possible to see the growth of both the stem and the roots. By the use of the germinator we are able to furnish excellent material for the drawing classes, the nature study classes, and the language work. This model is made in several of the grades.

The bird-houses which we build every spring serve a double purpose for we try to make this a nature study lesson as well as a manual training model. The work on this model is always preceded by a talk about the birds which are usually seen each spring in the neighborhood and the children are on the lookout for the first new comers. Stories of birds are told and the children are shown colored pictures. Each child chooses a bird for which he wishes to make a house. These houses vary in size and the doors must be made just large enough for the birds which are to occupy them. After choosing the bird, the size of the house and the door are determined upon and the pupils begin work. The method followed in making the houses is the same so the difference in size makes it more interesting to the individual pupil. Fig. 5, showing the steps followed in making the bird-house, illustrates how simple this model is. First the ends are made on the plan of constructing a platform. If we are using lumber two inches wide and wish to make the door for the wren-house we use one inch lumber where the door is to be made cutting the board off so the opening will be one inch wide. A board one inch wide finishes this platform. Next the sides are nailed on and then the top and bottom. We make an additional roof and put this on top leaving an air space between. Hundreds of these bird-houses are found all over the city.

Fig. 6 shows a martin-house with four compartments. These houses have been made this spring by third grade children. The one in the illustration—showing the steps—was made by a boy nine years old. The others were made by two pupils working together. We sometimes try a two-story martin-house with eight compartments.

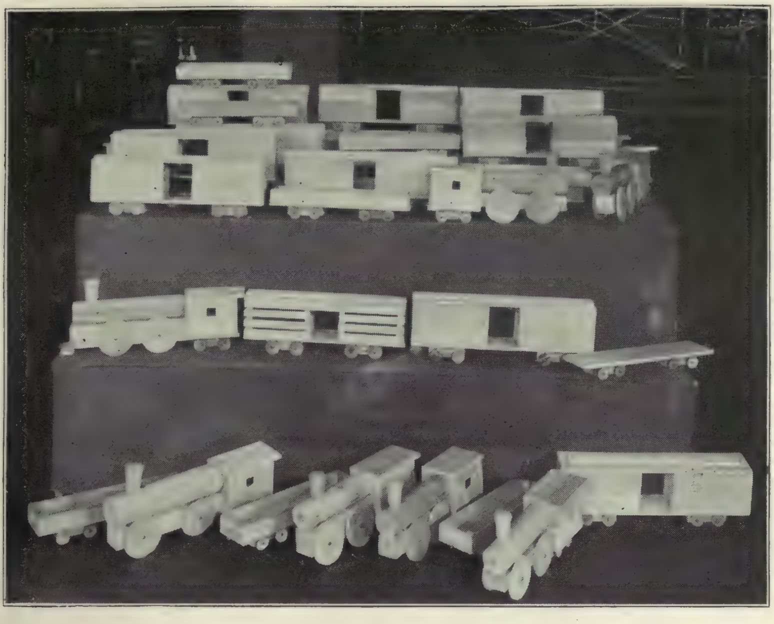


FIG. 7. FOURTH B. GRADE GROUP PROJECT—GEOGRAPHY.

Another model which we feel will be useful in our nature work is the blueprint frame. This is the first year we have tried the blueprint frame and it has been made in the third grade. The method of construction is very simple and the model is perfect from the standpoint of doing the work for which it was designed.

CORRELATED PROBLEMS.

We try to make history and geography more interesting and comprehensive by having the pupils construct some of the things about which they are studying. Such as canal locks, water wheels, elevators, dredges, scows, etc.

A year or two ago a fourth grade became very much interested in

transportation by means of railroads. These pupils made a very comprehensive study of the different kinds of cars, sizes, uses, etc., and finally constructed the cars as well as a crude engine and tender. Fig. 7 shows some of the things they made.

We begin making tools in the first grade and we encourage the

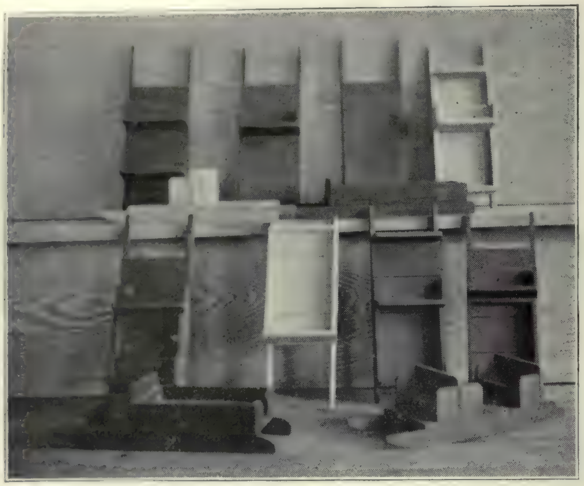


FIG. 8. SHOWING HOW THE SLED PROJECT IS CARRIED OUT. FIRST GRADE MODEL. SEE ALSO FIG. 5.

children to fix up home shops. Each year the pupils write letters to Santa Claus asking for certain tools and as a result almost all of the boys and girls in our model school have home workshops. In them they spend much of their spare time during the year and a great deal of their vacation time.

An effort is made to let the pupil put himself into his work as much as possible. When we wish to teach a process we very often have the pupils all make the same thing and exactly alike. This is illustrated in Fig. 8, which shows several sleds made by a first grade. The lower part is the same in all the sleds, but the pupils are allowed to finish according to fancy. Some have added a seat, some two, others a box and a seat, etc. Several times each semester the pupils have similar opportunities, as well as a chance to take the initiative and make entirely original models. At Christmas time we make toys and we are beginning to draw and saw out animals which we use in the toy making.

PICTURE-FRAMING.

Beginning with the first grade and continuing thru all of the grades

we teach the framing of pictures, see Fig. 9. This we try to make much more than the constructing of frames. The children select the pictures which they very often cut from magazines and bring to their teachers for criticism. The student teacher submits the pictures to the supervisors for suggestions. As a rule the pictures selected are colored and if some pupil is unable to find a pleasing picture, one is furnished for him. The pictures framed in the first grade are uniform in size and this project follows the making of the loom. In the second grade the frames may be any size up to a certain limit. In the third, two or more pictures are framed in a group. In the fourth grade hard wood is used and the pupils must saw to a knife line, and in the fifth the frame is made from a single board using the jig-saw. The rabbet is formed by gluing a second piece on to the first having a larger opening.

FIG. 9. PICTURE-FRAMING, GRADES TWO TO FIVE.

Toys are made in all of the grades and the ages of the pupils determine the character. We feel that we are only making a beginning in this field. The importance of good substantial home-made toys can hardly be overestimated. If American children can be taught to make good toys, of pleasing proportions and decorated with simple harmonious colors, we will be going a long way toward cultivating good taste which will show itself in the decorations and furnishings of homes in the future.

As early as possible we introduce practical things into the course. Both boys and girls make hand sleds in the third grade which they can use. The illustrations show that the sleds are different and that the pupils have a good deal to say about the character of the sleds. In the fourth grade the boys may make a double runner. This is but a single example of a large number of usable things made.

Beginning with the fourth grade the square prism material is used. Interesting mission furniture, book- and music-racks, tabourets, etc.,

are made. This is difficult work and requires very accurate sawing and is an excellent test of the pupils' ability.

Group work is not as successful in the lower grades as the individual projects. We have tried group work with some success in the third grade. A circus parade is an interesting subject and each child should

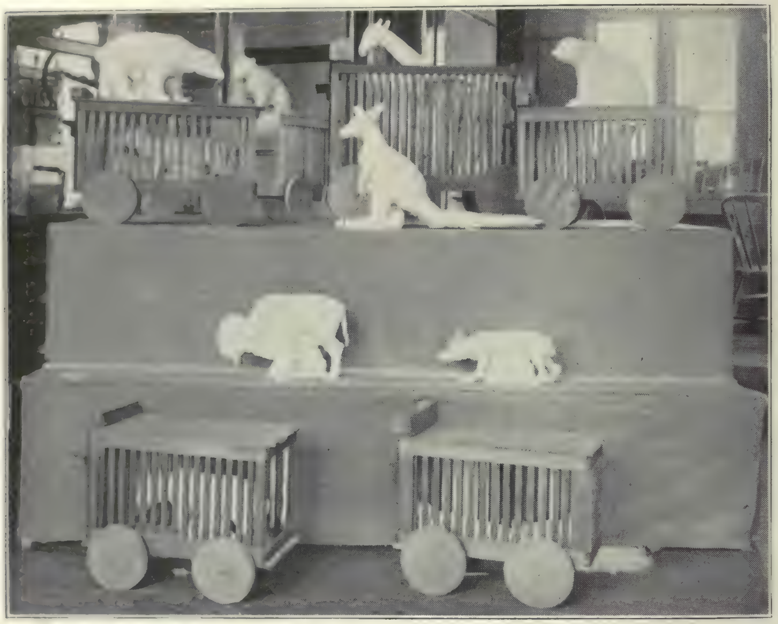


FIG. 10. THIRD GRADE GROUP PROJECT—CIRCU3 PARADE.

be give a wagon to make and the animals to model in clay. See Fig. 10.

A farm scene can be worked out in the spring. The pupils can make the farm buildings, lay out fields, build fences and gates, construct the farm tools, machinery, wagons, sleighs, etc. They should also have a chance to model the animals and people, plant the fields to grain, and spend the entire spring in a profitable study of farm life.

Our pupils have been very much interested in making all of the kinds of wagons, carts, etc., which they see at different times in the city. The working out of this project is preceded by several weeks of observation and almost daily questioning on the part of the teacher.

We try to interest the pupils as early as possible in the world's work

and we find that fourth and fifth, and even third, grade pupils are very much taken with work of this character.

I thoroly believe in the importance of paper work, raffia work, clay modeling, etc., in these lower grades but in comparison, *work in wood* is many times more valuable.

I was recently talking with a teacher who has been supervisor of practice for many years in one of our leading Normal Schools and she said that it is her opinion that industrial work of the right character in the first four grades is of more importance than any other four years of the pupils school life.

SUMMARY.

To realize the importance of this simple woodwork in the lower grades one must observe the children during a period of several months. The muscular development and control which will be apparent will convince the most skeptical of the importance of this kind of manual training. I have carefully studied this woodwork in the lower grades for the past seven years and I feel that it is worth while for the following reasons.

First: It takes the pupils out of the school desks and necessitates the use of the larger muscles of the body.

Second: It provides a kind of activity which gives the child pleasure —hammering and sawing—and when coupled with the making of useful objects which appeal to the child, may well be called play work.

Third: It provides a kind of work which connects the child's world with the world of things about him.

Fourth: It gives an actual number experience which is of the greatest importance to a child of this period.

Fifth: It vitalizes and makes real many things in geography and history which the pupils usually read about or at best see thru pictures.

Sixth: It furnishes a practical incentive for the use of constructive imagination.

Seventh: It provides a kind of muscular gymnastics, which may be so graded that the sequence will develop power in the child by the mastering of new difficulties.

Eighth: It makes the development of the body and the mind one and the same thing.

The outline presented herewith is a tentative plan of work for the first five grades which we change whenever we find anything better.

MANUAL TRAINING IN THE GRADES

TIME: Thirty Minutes Daily

TOOLS.	PROCESSES.	GRADE.	TYPE.	ORIGINAL WITHIN LIMITA GIVING OPPORTUNITY DESIGN.
Rule. Try-square. Saw. Hammer. Sandpaper File. Knife. For 3rd grade. Spokeshave or Draw-ing-knife is added	Squaring. Sawing. Measuring. Nailing. Sandpapering. Filing. Whittling. Staining.	1st.	1. Bench-Hook. 2. Plant-Stand. 3. Sled. 4. Loom. 5. Picture-Frame. (Size Uniform.) 8. Ladder. 9. Nail-Box. 10. Stools. 11. Plant-Stand No. 2. 12. Table. 13. Cart.	2. Plant-Stand. 3. Sled.
		2nd.	2. Box with Cover. 3. Wardrobe. 4. Cupboard. 5. Wash-Bench. 9. Picture-Puzzle. Box. 11. Germinator. 12. Rural Mail or Mill Wagon.	6. Picture-Frame; (Size limited by tea 10. Bird-House. 12. Glove-Box.
Same as for Grades 1, 2, and 3, with addition of bit, brace, and screw-driver.	Squaring. Sawing. Measuring. Nailing. Whittling. Filing. Sandpapering. Staining. Waxing. Sawing to Knife Line. Boring.	3rd.	1. Map-Puzzle Box.	2. Picture-Frame; (2 pictures in one fr 3. Sled. (large enoug use.) 7. Martin-House. (4 or 8 compartmen
		4th.	1. Chair. 2. Foot-Stool. 3. Table, made from ¾" sq. pr. material and large enough for use by small children.	4. Picture-Frame; (hard wood) Saw to knife line. 5. Kitchen Knife-Box Saw to knife line.
		5th.	1. Bench-Hook, made from board ¾" thick and 4" wide; end strip 1¼" wide. 2. Salt- or Mail-Box. 3. Jardinier-Stand.	4. Necktie-Rack. 5. One-piece hardwoo Picture-Frame. 7. Desk-Calendar. 8. Mouse-trap. 9. Tool-Chest, made sq. pr. strips. Use miter-box.

RIGINAL.	GROUP WORK AND INDUSTRIAL CORRELATION.	TOOLS, APPARATUS. AND CORRELATION WITH OTHER SCHOOL WORK.	TOYS AND GAMES.	MATERIAL.
d 7. Xmas odels. lls, Furn- re. Lumber pared by cher to e pupils start. 14 d 15 Origi- l.		4. Loom to be used as soon as finished.	Many of the models in the 1st grade are classed as toys. 10, 11, 12, 13 are Toys.	1/4", 3/8", 1/2" soft wood boards ripped to any desired widths.
d 8. Xmas odels. acher to e pupils a rt by show- things ich might made. 14 d 15. ginal.	*Farm Scene.* Building, fences, tools, wagons, sleighs, etc. can be made.	1. Loom larger than one made in 1st grade Rugs made from material found at home, and most of weaving done by child as home work. 10 and 11. Bird-House and Germinator.	3, 4, 5 and 12 are Toys.	Material same as for first grade.
mas. Mod- Boxes, ture- mes, Sleds,	4. Land Transportation. Farm, milk, mail, stone, hucksters' delivery wagons, etc. Carts, wheelbarrows, sleighs.	11. Blueprint Frame. 8. Canal-Locks. 9. Dredge. 10. Water-Wheel. See-Saw.	12. Ring Toss. 13. Swing Seat. 6. Toboggan Slide.	Same as for grades 1 and 2 with addition of 3/4" board ripped for sleds, etc.
mas Mod- 14. Origi- Model. imal Toys Wheels.	7. R. R. Transportation. Box, furniture, coal, oil, stock, passenger cars, engine, tender, etc.	8. Science Models. Windlass, Derrick, Testing tensile strength of wire, Center of Gravity Apparatus, etc. 9. Models illustrating the early discoveries in N. A. 10. Models illustrating Indian life. 11. Flower Boxes for Schoolroom. 13. Seed Tester.	13. Darts.	Same as for grades 1, 2 and 3, with addition of 3/4" sq. pı material.
mas Mod- 15. Origi- Model.		10. Tool Box, sq. pr. strips. 11. Models ill. Colonial life: Stocks, Pillory, Ducking-Stool. 12. Weather-Vane. 13. Block-House, sq. pr. strips. 16. Science Models: Loop the Loop, Models ill. action and reaction, Lever, Spirit Level.	14. Kites. Windmill.	Same as for grades 1, 2, and 4.

DESCRIPTIVE GEOMETRY, II. METHODS OF PRESENTATION.

H. W. Miller.

THERE are in use at present in various institutions, three methods of presenting the subject of descriptive geometry. It is perhaps easier to describe briefly the procedure followed under each of these methods than to name the methods themselves.

From investigation, the writer finds that 200 hours is a fair average of the time spent by students of various institutions in preparation and recitation of the subject under discussion. 1. Under the first method about 150 hours are spent in preparation and oral recitation and 50 hours in the drafting-room in solution of graphic problems. In such courses the time spent in oral recitation is devoted to oral quizzing of the students on analyses; the time in the drafting-room in solving from thirty to fifty graphic problems and in inking in various colored inks. 2. Under the second method the 200 hours are about equally divided between preparation and oral recitation, and drafting-room work in solving graphic problems; i. e., about 100 hours in preparation and recitation, and 100 hours in drafting. 3. Under the third method the procedure of the first is about reversed; i. e., about 50 hours are spent in preparation and 150 in the drawing room solving graphically both theoretical and practical problems.

If the engineering education is to be of any value to a man he must be taught from the time he enters until he leaves, how to record or express his knowledge and ideas both verbally and graphically. If he is to direct the operations of others he must be able to express intelligibly his orders and directions. If he can express himself verbally but not graphically, or the reverse, he is continually handicapped in meeting occasions where the other accomplishment is necessary; and if he is able to express himself in neither way *he is not an engineer* but a *laborer* to be directed by others.

How common it is to hear a teacher say of a student: "He knows the subject, he is bright enough, but he cannot express himself intelligibly;" or to say of a class: "They can solve problems at the board but make a hopeless mess of it when they attempt to explain their work." This fault or deficiency is so common that it seems to be taken for granted as necessary. Each teacher has a remedy to

suggest but that remedy is not to be applied by him. But few of us teach a subject with a conviction that it is our duty to teach each student to the utmost of *our* ability, how to express verbally always, and graphically also if the subject be such, the knowledge he is gaining from that study. How much better application a student can make this year, of the knowledge gained last year, if last year's teachers (remembering that we are "last year's teachers" of next year), had, besides giving their students a thoro understanding of their studies, taught them to speak and write intelligibly that knowledge.

The selection of one of the three methods of presentation as the proper one then seems to depend entirely upon one's conception of his duty as a teacher of that particular subject. Expressed in a few words, it seems to the writer that the duty of every teacher, no matter what his subject be, is to teach his students to speak and write intelligently and intelligibly in the language of the subject he teaches; if he fails in this he shirks his responsibilities, because he need not fail. If this conception of duty be correct the second method will accomplish the desired results.

The following is a summary of the manner in which this second method is applied with most pleasing success at the University of Illinois. Except during the first two weeks, when the students are taught to plot problems by coordinates, all exercises (plates) are printed from zinc etchings. Students formerly consumed about one-fifth of the two-hour period in plotting problems from coordinates; the practice became monotonous, taught nothing, bred carelessness, and wasted time. This time is now used in solving extra problems. In all, the student solves graphically about 400 theoretical and practical problems.

SUMMARY OF PROCEDURE.

Time: 18 weeks, second semester of Freshman year.

No. hours per week, 8; divided into two 3-hour and one 2-hour periods; e. g., Tu. 8-11, Th. 8-11, S. 8-10.

No. Recitations per week, 3; first hour of each period; e. g., Tu., Th., S., each, 8-9.

No. Lessons per week, 2; first hour of each three-hour period; e. g., Tu., Th., 8-9.

No. Review hours per week, 2; first hour of two-hour period in oral review on previous two lessons; second hour, review plate.

Quizzes: Given regularly at intervals of three weeks or six lessons.

Examinations: Inter-Semester examination on point, line, and plane, given as soon as this work is finished. No further examination on this part of the work except for such men as fail on this examination. Failures on inter-semester examination are not recorded.

Final Examination: Final examination on surfaces, developments, and intersections for all at end of semester. Final examination on whole text for those who failed on first examination.

DIVISION OF WORK.

Drawing-room work: Two-hour plates (8½ x 11″) containing five or six graphic problems to be solved by the theory of the day's lesson or any previous lesson. One-hour review plates.

Home work: Plates containing five or six graphic problems. Handed in at beginning of each recitation on an assigned lesson. Not accepted later under any consideration. Solved at home by theory of lesson for day on which plate is due.

Text: *Miller*: Descriptive Geometry.

TYPICAL SCHEDULE FOR ONE WEEK'S WORK.

Tuesday, 8-9. (a) Home plate received, next home plate given out. (b) Recitation on articles (—). Instructor uses from twenty to thirty minutes in explaining points which may have given trouble in the lesson of the day; also in explaining theoretical or practical applications of theory of the day's lesson; also in clearing up points generally misunderstood in previous lesson. (c) During remainder of the hour as many men as possible are sent to the boards to solve freehand, problems assigned them from the quiz sheets in back of text. (d) Men not sent to the boards are given three to five minute quizzes on analyses or problems. Remainder of time in oral quizzing on analyses.

Tuesday, 9-11. Students report from recitation to the drawing-room, each is given plate (all receive the same plate) containing five or six graphic problems (plate printed from zinc etching). This plate must be handed in at 11:00 o'clock, finished or unfinished. No aid is given by the instructors. The plate amounts to a two hour quiz; the students so understand it, and know that if some one else works their

home plate they themselves will be caught up in the drawing-room. No trouble whatever is experienced with men having others work their home plates, as it works immediately to their detriment; no one tries it a second time.

Thursday, 8-11. Similar to Tuesday thruout.

Saturday, 8-9. Review on last two lessons. The quiz sheets in the back of the text contain about 850 graphic problems, from which forty or fifty can be found to apply to the last two lessons. As many students as possible are sent to the boards, each assigned a certain problem which he solves (freehand), giving first the analysis then the construction. Another student then takes his place; it is usually found possible to have all of a class of twenty-five recite in the one hour. This review recitation was only lately introduced (the two-hour period having been used in solving a two-hour plate) and the oral recitation, in which the instructor criticizes keenly the student's choice of English, has worked such a benefit that the experiment is now a custom.

Saturday, 9-10. Students are given printed plates (three problems), which are printed on the mimeograph the day before so that the problems may be designed to correct difficulties experienced in the last two lessons.

ONE UNIT IN TIME AND PROCEDURE.

Week	Day	Procedure	
1	Tu.	Recitation (1 hour)	Home plate received. Oral Recitation. Written Recitation or Quiz. Graphic Quiz.
		Drafting-Room (2 hours)	Plate of five or six graphic problems.
	Th.	Same as Tuesday	
	S.	Review of Tu. and Th. (Both oral and graphic)	
2	Tu., Th., S.	Same as Week No. 1	
3	Tu., Th.	Same as Week No. 1	
	S.	Quiz on Weeks 1, 2, and 3.	

SOME FINISHING MATERIALS AND THEIR USES IN CONNECTION WITH SCHOOL WORK.

George H. Resides.

THE courses as outlined in most manual training and industrial training schools of today consist of a required number of exercises in wood, illustrating the use of the tools and various joints as used in connection with cabinet-making. After these exercises are completed the pupils are usually allowed to make such pieces of furniture as appeal to their tastes and meet with the approval of the instructor. This same method is followed to some extent in the shopwork given in engineering courses in some colleges and universities. While these courses generally consist of a larger amount of exercise work, some time is usually devoted to furniture design and construction. This is especially true of the teachers' courses in manual training.

In this class of work we are brought to the place where the finishing materials and their uses play their part. Care should be used in selecting a finish suitable to the style of furniture; that is, certain styles of furniture look best with mission finish while on others it would not be appropriate at all. In order to assist students in selecting suitable finishes for pieces of furniture which they had constructed, the writer prepared eighteen sample panels; see Fig. 2 for dimensions. Both sides of the lower portion of the panels were finished. This has a tendency to keep the panels straight and permits of two different shades or styles of finish being used on the same piece. The upper portion is not finished at all, the idea being to show the natural wood in contrast to the finished part.

Lectures on finishing materials and their uses are given the students in connection with the woodwork. The different materials entering into the making of stains, fillers, shellac, varnishes, panels, etc., are taken up in detail and explained. The panels referred to above are of great service in the lecture work. In connection with detailed description of the materials entering into the making of stains, several bare panels are selected and stained, showing the method to be followed in applying the stain; the same procedure being followed with the filler, shellac and varnish. The final finishing, waxing, or rubbing

down and polishing is done during the next class period. A record is kept of the material used on each panel. This is then typewritten and pasted on each one. In this way anyone can readily see what materials were used in the finishing. Small pieces of furniture can also be used to advantage for demonstration work in finishing.

FIG. 1. ARRANGEMENT OF PANELS SHOWING USE OF VARIOUS FINISHING MATERIALS.

The panels were made of various kinds of wood, such as oak, plain and quarter-sawed, chesnut, walnut, mahogany, yellow pine, maple, poplar and basswood. After they were all finished, the next question was how to place them on the wall so that they would not get scratched or marred, and also so that they could be revolved so that either side could be seen. Fig. 1 shows the method finally adopted. Thirty-six brass angle plates were made from sheet brass ⅛″ thick, see Fig. 3. These were screwed to a board on the wall, and spaced so as to allow the panels to be revolved without striking each other. A small brass washer was placed between the angle plate and the panel, both top and bottom.

Stains are usually classed under three heads: water stains, spirit stains and oil stains. Each has its advantages and disadvantages. A large percentage of all furniture stains is produced from anilines. Some colors have an acid reaction, others neutral; the balance are alkaline. Water stains are purchased in powder form. The formulas on the can tell how much powder to use in a given quantity of water. Water stains penetrate the wood very deeply; this is especially true if applied warm. Another advantage it has is that it costs less than spirit or oil stain. The disadvantages are, that it raises the grain of the wood, requiring considerable sandpapering in order to prepare it for filling and varnishing or waxing. Another objection the writer has to it, is that

it is difficult to get uniform colors. This is especially true in school work where only a small quantity is wanted at one time.

Acid stains are made chiefly from anilines. The anilines are dissolved in alcohol and allowed to stand for several days. They are then strained and are ready for use. Acid stains penetrate the wood very deeply, and give very good results, but the chief objection to acid stain is that it raises the grain as does water stain.

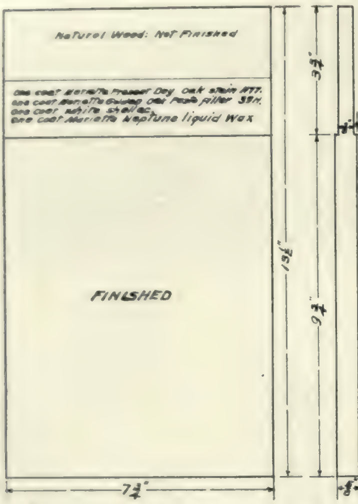


FIG. 2. SAMPLE FINISHING PANEL.

Aniline colors are produced from coal tar. This group is most brilliant and absolutely transparent, so that it makes what is called a perfect stain, containing no pigment whatever, but it has the disadvantage of not being very fast when subjected to light.

Oil stains are made by dissolving pigments in linseed oil and turpentine or naphtha. Oil stains would certainly be the ideal stains and even with their drawbacks they have much to recommend them. The one feature which belongs to them is that they do not raise the grain of the wood. The common line of oil stains do not penetrate very deeply into the wood. Another method of making stains is to use a pigment coloring such as sienna, umber, VanDyke brown, and the newer group of colors, called toners, which are produced by the later treatment of certain colors which are called paranitranaline or Alizarine colors. This method of treating the products of coal tar and combining them with certain fixed pigments has the effect of making them very fast when subjected to light. Oil stains and special Spartan stains made by the last named method are very powerful and penetrating, and give splendid results.

Some companies in making stains or dyes, dissolve the colors in alcohol. This gives them penetrating qualities. There is also a small quantity of oil added so that the stain may be easily applied and not show laps. The small quantity of oil added also prevents the stain from raising the grain of the wood. Stains of this character give very satisfactory results.

Varnish stains are very simple to manufacture, as the body is composed entirely of varnish. Any varnish that will dry properly and retain a good gloss is suitable for this work. To this varnish is added whatever coloring materials may be desired to produce certain effects. Either the aniline or paranitranaline colors may be used.

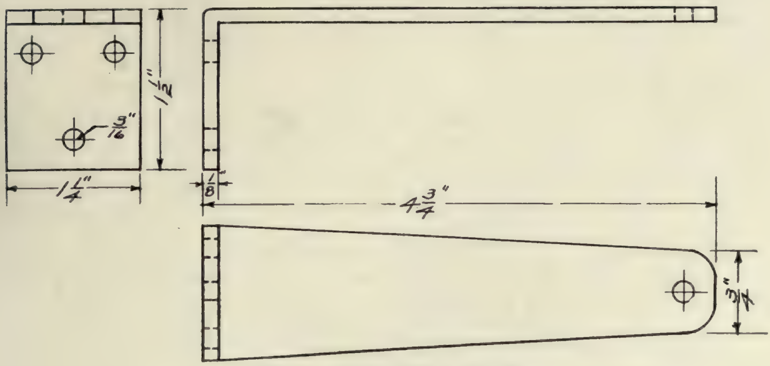


FIG. 3. BRASS ANGLE PLATE.

In using a stain it makes considerable difference whether it is used on the solid wood or on a veneered surface. On the thin veneered surface backed up with glue, the stain will not penetrate deeply, while on solid wood the stain penetrates deeper, making a much deeper shade of color. Another controlling factor is the texture of the wood, whether it be soft or hard. Soft woods take stain more readily than hard woods. The stain for soft woods would therefore require more reducing if the same shade is desired. Some stains require wiping after being on the wood twenty to thirty minutes; others are allowed to dry entirely, while with some others the stain is allowed to dry about two hours and then the filler is applied right over the stain; the rubbing in and wiping of the filler will clear up all laps or cloudiness of the stain. A second coat of stain will always darken the color. It is always wise to follow the instructions as given on the labels by the manufacturers.

FILLERS.

These are divided into two classes; liquid fillers and paste fillers. Liquid fillers are usually made from a cheap grade of rosin varnish,

drier and turpentine, and with some body of whiting or some similar substance.

Liquid filler is intended to be used only on close-grained woods; such as yellow pine, maple, or birch. It is cheaper than paste filler and is more easily applied, inasmuch as it is merely painted on like varnish and allowed to dry. After it is dry it should be sanded down so as to obtain a smooth, even surface. Shellac is better than liquid filler, but it costs more money and it is more difficult to apply so that it does not show laps.

Paste filler. The base of paste filler is usually very finely ground, needle-like silex, to which is added enough pure linseed oil, and a good grade of Japan drier to form a cement when drying. This makes what is called the natural filler. When producing a combination filler, such as golden oak, light antique, or dark antique, etc., coloring matter is added to this cement to produce the desired effect. Pigment colors ground in oil are the best. This mixture is then thinned with turpentine or benzine to a working consistency before it is applied. The use of whiting and cornstarch in making paste fillers should be discouraged. Dark fillers should be used over dark stains.

Filling is the all important operation to the wood finisher, which cannot be slighted if the finished product is to prove satisfactory. Filling means the perfect leveling up of the surface of the wood upon which the permanency of the finish depends; it is the foundation, and if it has been imperfectly laid, it is sure to cause trouble at some later period. The filler should be applied with a rather stiff bristle brush. The writer has seen men who claimed to be finishers, apply paste filler just the same as they would paint or varnish, allowing it to remain a minute or two and then wiping it off, wiping in the direction of the grain of the wood. This method of filling should be discouraged as it is really nothing more than staining, that is, so far as actual results are concerned.

The filler should be allowed to remain on the wood until it is pasty and sticky and then as much of it as is possible should be rubbed into the pores, rubbing across the grain. Fine shavings, excelsior, or burlap can be used for rubbing and wiping the filler, but for first class work, cotton waste is more satisfactory. The filler should all be wiped off the surface of the wood. If this is not done the finished product will have a rather clouded appearance after it is varnished. Examine the job carefully and if the pores are not all filled up properly, give it another coat of filler.

A piece of furniture, or in fact, any kind of woodwork will look better with one coat of varnish upon a thoroly filled surface, than it will with two coats of varnish upon a poorly filled surface.

All open-grained woods, such as oak, chestnut, ash, walnut, mahogany, etc., should be filled with a paste filler. Some finishers apply a coat of liquid filler on top of the paste filler, while others use a surfacer. Either method usually gives satisfactory results. The object of using the liquid filler or surfacer is to seal thoroly the pores of the wood so as to prevent any shrinking of the varnish.

ORANGE SHELLAC VARNISH.

Orange shellac varnish is made by dissolving flake shellac gum in alcohol. Either grain, denatured, or wood alcohol may be used, but grain and denatured are preferable to wood alcohol. Orange shellac can be procured in two shades; the one being a very pale yellow, the other a rich amber.

White shellac varnish is made from bleached shellac gum and alcohol. It will be found necessary to apply heat in dissolving the bleached shellac gum.

Orange shellac varnish is used for painting patterns, polishing work on the lathe and as a surfacer or first coater over a filled surface on which varnish or wax is to be applied. The writer prefers the very pale yellow shellac.

White shellac is used on light colored work where no discoloration is permissable and it is also to be preferred to orange shellac, as a first coater, except on very dark colored wood. It is easier to apply than orange shellac, owing to the fact that it does not dry as quickly and does not show the laps as plainly.

VARNISH.

Varnish is used chiefly to beautify the surface and to protect the color and the grain of the wood under it. In a general way varnish is made from gum, linseed oil, turpentine, and the necessary dryer.

The making of varnish is a process which requires the greatest care and precision. About 125 pounds of selected gum is placed in a large brass kettle mounted on trucks, which is rolled over an exceedingly hot fire and the gum melted. This causes a loss in weight of 10% to 20%.

The melting gum foams vigorously and must constantly be reduced by stirring. The melting process lasts about 25 to 35 minutes at a temperature from 600 to 650 degrees Fahrenheit. Linseed oil is heated in a separate vessel and when the gum is thoroly melted it is allowed to cool somewhat and the hot oil gradually added. The kettle is then moved over the fire again and the mixture is cooked at a temperature varying from 400 to 600 degrees. After the cooking is properly completed and the mixture slightly cooled, the proper percentage of turpentine is added. The varnish is then strained, purified and stored for a period of from 2 to 12 months. The aging or ripening of varnish is a very important factor. Kauri gum is used very largely in the manufacture of high grade varnishes. It is the fossilized rosin of the Kauri pine. It is found in Auckland, a province in the northern part of New Zealand. The Kauri tree has a great spread of branches which are the main source of the gum. The sap rapidly exudes from any cut made in the bark and solidifies when exposed to the air. This falls to the ground to be buried and fossilized, coming only to light of day when it is dug out by the gum diggers centuries later. The dealers in Auckland sort the gum and rescrape and grade it. Most of it is then shipped to London and New York.

Zanzibar gum is of the very highest quality and is used only in the manufacture of the highest grade varnishes. It comes from Zanzibar and is also a fossilized gum of a long extinct species of tree. The cheap grades of varnish are made from cheaper gums or rosin. Quick rubbing varnishes are made from hard gums, and contain a low percentage of linseed oil, while in varnishes where great durability is required, floor varnishes for example, a more elastic gum is used, and the percentage of oil is increased to the maximum.

VARNISHING.

The room in which varnishing is done should be as free from dust as it is possible to make it and the temperature kept at 70 degrees. Varnishing cannot be done successfully in a cold room. For large surfaces and surfaces where the finest of finish is not required, the oval metal-bound varnish brush or the flat varnish brush will give good results, but on first class work where it is necessary to put on a flowing coat, a fitch flowing brush should be used.

Before using a new varnish brush, see that all dust is removed from it. This can be done by brushing it vigorously across the hand. Suf-

ficient varnish should be lifted with the brush to cover a fair amount of surface and be so spread with the brush that it will flow out evenly. Care should be exercised in applying varnish that it does not sag. Sagging usually occurs when the varnish is not brushed out properly.

Only sufficient varnish for the job on hand should be taken from the can. If you take more varnish from the can than is needed, dilute it with turpentine and use it for keeping the varnish brush in, when not in use. Do not attempt to varnish with anything but a perfectly clean brush.

As to the number of coats of varnish to be applied, this depends entirely on the class of finish required. On a well filled surface, one coat of varnish will give a fairly good job. In case something better is wanted, the first coat should be rubbed down with fine sandpaper or steel wool, dusted off thoroly clean, and after the dust has settled, the second coat of varnish can be applied. The rubbing with sandpaper or steel wool should always be in the direction of the grain of the wood. Two coats are usually sufficient for the ordinary class of work. The second coat can be left with natural gloss finish or rubbed to a dull finish with pulverized pumice stone and water. A piece of rubbing felt should be used. This can be dipped into the water and then into the pulverized pumice stone, lifting sufficient quantity of that article to the surface about to be rubbed. After the rubbing is completed, the surface should be wiped thoroly clean with damp cotton waste or a damp cloth. Almost any hard drying varnish can be rubbed and polished but a regular rubbing and polishing varnish will give the best results. Let each coat of varnish dry thoroly before rubbing or applying another coat. Trouble is sure to follow if this is not done. The cheaper grades and the quick rubbing varnishes will dry in about two days, while with the high grade piano polishing varnish, it takes from six to ten days to dry for rubbing.

POLISHING.

If a polished finish is required the last coat of varnish should be allowed to dry thoroly and then rubbed to a dead level surface with pulverized pumice stone and water. Then wipe thoroly clean with damp cloth or waste. If any of the pumice stone is allowed to remain it will scratch the surface during the polishing operation.

Various materials and methods are used in polishing, rotten stone and water, rotten stone and oil, or rotten stone and furniture polish

wax be used. Sometimes polishing powder or tripoli is used instead of rotten stone. Furniture polishes are made primarily to clear up a surface that has been rubbed with pumice stone and water. They are usually composed of certain proportions of turpentine and benzine, to which is added some oils, such as neutral oils, or sometimes cup grease, thoroly mixed so as to be held in solution; and then in order to clear the surface, after the goods have been polished, a certain proportion of alcohol, vinegar, or ammonia and such essential oils as cedar or citronella is used. This last operation is usually known as spiriting off. The proportion of equal amounts of spirits and oil will give satisfactory results. The more spirits that are used, the more caution will have to be observed. Sometimes pure alcohol is used in spiriting off, but this requires extreme caution and is not safe to use except by those thoroly familiar with the action of alcohol.

WAXING.

Wax finish is used very extensively in school work. The wax is very easily applied. The best prepared wax is made from hard, high melting-point wax imported to this country from Brazil. There is also a liquid wax on the market, which, if used according to directions, will give very good results. The cheapest wax finish is obtained by merely staining the wood the required shade and then applying the wax. A better finish can be obtained by filling the wood after it is stained and then waxing it, and if something still better is desired, a coat of shellac, underlac, or transparent surfacer can be applied over the paste filler, and allowed to dry thoroly and then sanded lightly before the wax is applied. This will give a very satisfactory and desirable finish. Black wax will give the best results over a dark stained surface, altho the common prepared floor wax can be used.

FIG. 25. COMPLETED BASKET.

INEXPENSIVE BASKETRY. IV.

WILLIAM S. MARTEN.

WHEN handles are needed they must be spliced in where desired when the basket is being built up. They should stand any amount of hard pulling. If great care is not taken they will in time pull out. They must be so well spliced that only by tearing out the coils of the basket will it be possible to loosen them. For the large baskets a rope or heavy cord woven in with the rush running completely around the basket is sometimes desirable.

When the basket is built up to the desired height simply let the rush run out without entering any new strands, and the top will be finished level. It is well to reinforce the top with a double stitch. This is made

FIG. 26. PROBLEMS FOR THE GRADES: TABLE MAT, SERVING TRAY, FRUIT TRAY, COLLAR BOX, WORK BASKET, WASTE BASKET, ETC.

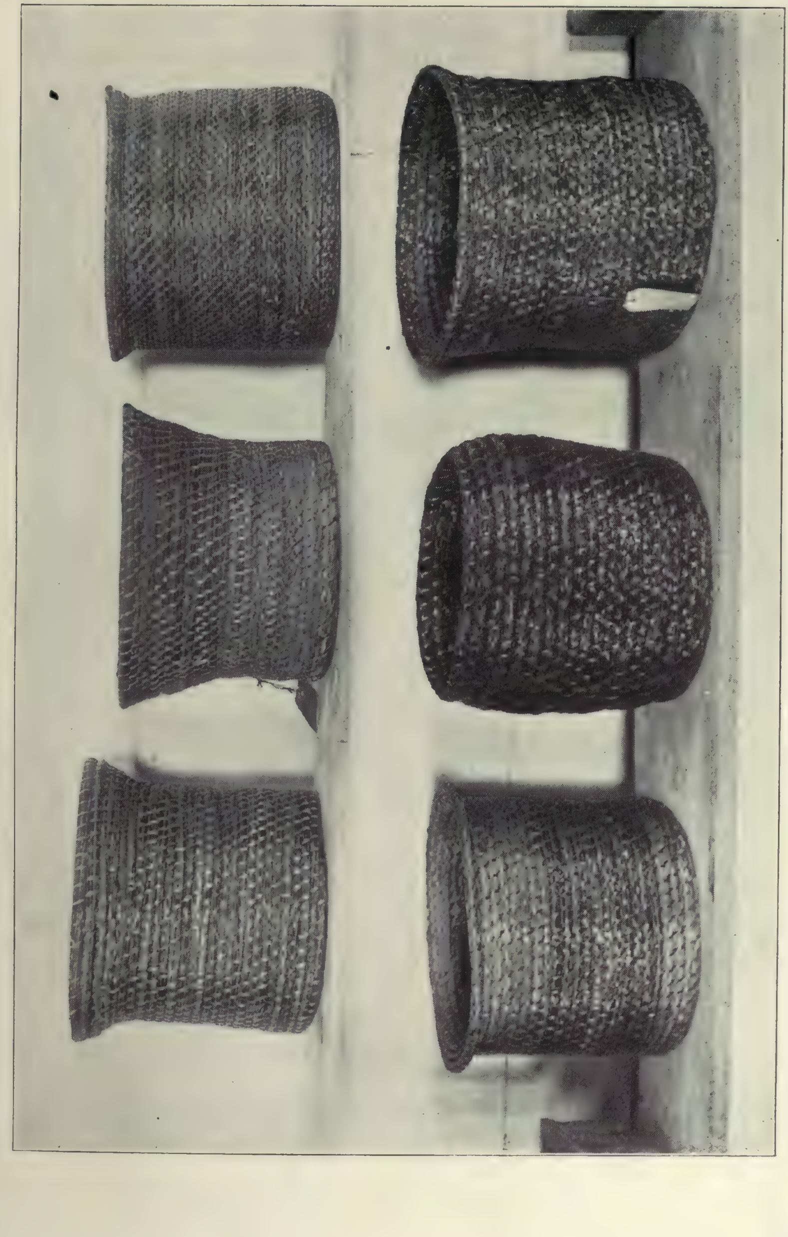


FIG. 27. OFFICE WASTE BASKETS.

by running an extra circle of stitches all the way around, backwards, that is in the direction opposite to that in which the basket was stitched up. This double stitch can be seen clearly in Fig. 25. The last end of the thread is fastened by simply running the thread back in and out

FIG. 28. PART OF WORK OF ONE SCHOOL, THIRD TO SIXTH YEARS.

again several times close to where the last stitch was taken. This makes a very secure tie.

The polishing is the rubbing in with a stiff brush of one or two coats of ordinary varnish. Altho this is not necessary it is very desirable because it increases the strength and serviceability as well as greatly enhances the appearance of the basket.

OUTLINE FOR THE COILED BASKET WORK.

I. Problem for grades.

Third Grade.	1.	Table mat. Fig. 26.
	2.	Tray for carrying glasses. Fig. 26.
Fourth Grade.	1.	Work Basket. Fig. 26.
	2.	Collar Basket or Box with lid. Fig. 26.

3. Nut Holder. Fig. 26. (Supplementary.)
4. Fruit Tray. Fig. 26. (Supplementary.)
5. Serving Tray. Fig. 26.

Fifth Grade.
1. Trash Basket. Figs. 26, 27.
2. Collar Box. Fig. 26.
3. Jardiniere. Fig. 26. (Supplementary.)
4. Paper Basket for desk. Fig. 26. (Supplementary.)

Sixth Grade.
1. Hamper for soiled clothes. Fig. 25.
2. Trinket or Jewelry Basket. Fig. 26. (Supplementary.)
3. Collar Box. Fig. 26. (Supplementary.)
4. Lunch Basket. Fig. 25. (Supplementary.)
5. Hanging Flower Basket. (Supplementary.)

II. Sizes of Problems.

1. Clothes hamper or laundry basket. 18″x20″ diam., 24″x26″ high—Large coil.
2. Work Basket. 9″x10″ diam., 3″x3½″ high—Medium coil.
3. Fruit Tray. 10″x12″ diam., 1½″ high—Medium coil.
4. Trash or waste paper basket. 10″x11″ diam., 12″x13″ high—Medium coil.
5. Serving Tray. 14″x15″ diam. 1″x1½″ high—Medium coil.
6. Desk-paper basket. 8″x9″ diam., 5″x6″ high—Medium coil.
7. Table mat. 6″x12″ diam.—Fine coil.
8. Tray for carrying glasses. 6″x7″ diam., ¼″x½″ high—Fine coil.
9. Trinket or jewelry basket. 5″x6″ diam., 2½″x3″ high—Fine coil.
10. Collar box with lid. 6″x7″ diam., 3″x4″ high—Fine coil.
11. Lunch basket with lid. 7″x8″ diam., 4″x5″ high—Fine coil.
12. Collection basket. 7″x8″ diam., 2″x2½″ high—Fine coil.

III. Sizes of details and materials.

1. Spacing.

1″ space between stitches with large coil.

¾″ space between stitches with medium coil.

⅜″x½″ space between stitches with fine coil.

The size of the coil will regulate the space between the stitches.

2. Coils.

Large coils ⅝″x¾″ diam.

Medium coils $\frac{3}{8}''$x$\frac{1}{2}''$ diam.

Fine coils $\frac{1}{4}''$x$\frac{5}{16}''$ diam.

3. Materials.

Use binding cane or material of similar strength with large coils.

Use medium narrow cane or material of similar strength with medium coil.

Use superfine cane or silkatine with fine coils.

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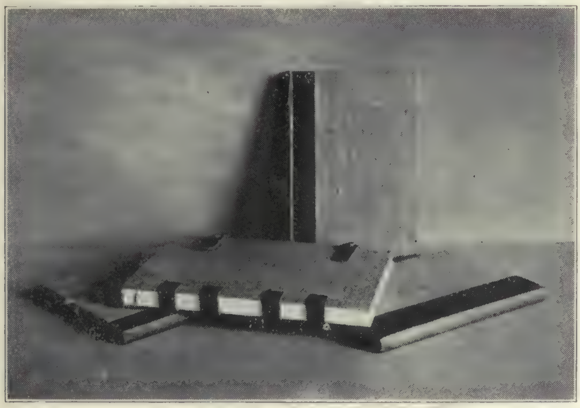

BOOKS BOUND IN SUMMER SCHOOL, BRADLEY INSTITUTE.

SAMUEL CUPPLES.

CALVIN M. WOODWARD.

(Address to graduating class, Saint Louis Manual Training School, Washington University, at the unveiling of the portrait of Mr. Cupples, June 12, 1912.)

AS requested by the Board of Managers, I am to speak to you of one of the noblest men I ever met; a man of whom personally you know very little, but whom I knew intimately for thirty-four years; I refer to Samuel Cupples whose portrait I am soon to unveil.

It is fitting that I should tell you of him, and that his portrait should always hang in this hall.

It was Mr. Cupples who said 33 years ago: "Let us organize a school and try the experiment of putting manual training into its course of study;" and he offered a generous support 'till the value of a systematic course of manual training could be practically shown.

It was this offer, made without solicitation, which led to concerted action on the part of Mr. Cupples, Mr. Conzelman, Mr. Harrison, and Dr. Eliot. Dr. Eliot gave the lot of ground at the southwest corner of 18th and Washington Ave.; Mr. Harrison erected the building; Mr. Conzelman equipped the shops and schoolrooms; and Mr. Cupples met for several years all the deficits in the expense accounts. The school opened with a class of 58 on Sept. 6, 1880.

But I must not fail to acknowledge the prompt assistance the men who under such leaders enlisted in the cause of the new educational movement. To William Brown, Willian L. Huse, Carlos S. Greeley, William A. Hargadine, Henry Hitchcock, Ethan Allen Hitchcock, Ralph Sellew, and William Barr, our gratitude will always be given; but it was to the unfailing support and constant advice of Mr. Cupples that our early success was largely due. The grounds, building, and capacity of the schools were doubled at the end of two years thru the contributions of Ralph Sellew, Gottlieb Conzelman, Dr. W. G. Eliot, and Mr. Cupples.

It was Mr. Cupples who proposed, and jointly with Messers. Sellew and Conzelman—actually secured the first permanent endowment of the School, $75,000.00.

Mr. Cupples was from the first a member of the managing board of the school, and for over thirty years he rarely failed to attend Board meetings, public exhibitions, and graduating exercises. It was largely thru his influence and personal effort that after twenty-five years of successful work at 18th and Washington, the school moved to this fine building and these ample grounds.

No sketch, however brief, of the relation which Mr. Cupples sustained to this school should omit a reference to the splendid way in which he endowed it with scholarships in the University, and his magnificent gifts to the higher technical departments. His interest in this school and its graduates led him naturally to the higher department for which this affords a thoro preparation.

Mr. Cupples believed in keeping all educational roads open at their upper ends. He saw that what he had expected was coming true every year in the demand which earnest youth, with cultivated minds and skilful hands, are bound to make as they receive the diploma of this school. They see an open door to the heights beyond, and they crave a chance to climb to higher fields and pastures new. So he joined to a princely gift to the School of Engineering and Architecture, the condition that twelve free scholarships should be given every year to graduates of this school, thus keeping the twelve simultaneously in use.

These scholarships are appropriately named the

"Samuel Cupples Scholarships"

in the Department of *Arts and Science.* These scholarships are a great boon to the school, and they are of immeasurable worth to aspiring youth of superior attainments, and high character.

But more than all else, more than all his gifts of money, unfailing tho they were, we value our founder, helper, and friend for the record of his life and character. The example he set, and the broad moral influence of the man are a precious bequest.

He was what we call a self-made man. He lacked the training of the higher schools, for technical schools and colleges were few and far between when he was a boy—but he made the best use of what opportunities he had. He formed no bad habits, sowed no wild oats, for he had none to sow, and he had no worthless weeds and tares to reap when he became a man. He won promotion by good work, strict attention to business, and unfailing industry.

As a young merchant, he was wideawake to all questions of supply and demand, and by thrift, courage, and good judgment, he made every

venture a success. Every bargain he made was one in which both parties gained. His wealth was the fruit of energy and skill, with absolute fairness and integrity. He gave every one a "square deal," and his word was as good as his bond, and that was "gilt-edged."

We often hear of men whose success seems based on the failures of other men; who grow rich, as and because others grow poor; and we sometimes realize the dread prediction of Oliver Goldsmith:

> Ill fares the land to hastening ills a prey
> Where wealth accumulates and men decay.

But the case of Samuel Cupples leads us to sing a different song, for his wealth and his life were alike a blessing in many ways to the city of St. Louis in which he spent his active life.

Those who knew Mr. Cupples best, know how ready he was to lend a helping hand. Tho he mixed judgment with generosity, he was at times,

> Careless their merits or their faults to scan,
> His pity gave ere charity began.

There is not time, nor is this the place, for me to tell of his labors in behalf of the public schools; of the assistance he gave to Central College in Missouri, and Vanderbilt University in Tennessee; of his work as president for many years of the Provident Association of this city; or of the aid he brought to struggling churches in and out of St. Louis.

We can not count his benefactions, but you may be pleased to hear that he once told me, that of all his investments, none had been so satisfactory to him as what he had given to this school.

For all he did and for all that he was, let us be forever thankful, and let us keep his memory green.

To these young men I say, cherish the memory of Samuel Cupples. Emulate his example. Remember his fidelity to duty, the absolute cleanness of his life as boy and man, his love of justice and fair play, his kindness and respect for his fellow man, his reverent attitude to our Heavenly Father, and his full recognition of the Sublime Order which every thoughtful man must detect in all created things.

As you go forth, you favored youth, to meet your growing responsibilities, you who begin now your careers in spheres of activity where you find yourselves best able to succeed and you who climb still higher the educational ladder, to secure a training which shall fit you for more

difficult and more responsible work,—do not forget the man whose portrait I am now to unveil.

* * * * * * * * * * *

This fine portrait by Mr. Gustav von Schlegell, instructor in our own School of Fine Arts, is presented to the school by Mr. Cupples' daughter, Mrs. W. H. Scudder, to whom our heartiest thanks are due. It is to hang in this hall, so that we may often, as we look upon that benignant face, recall the gracious founder, and the constant friend.

MADE BY EIGHTH GRADE PUPIL,
ROCHESTER, N. Y.

EDITORIAL

THE aim of the elementary school is not solely to prepare boys and girls for the high school. The real aim of the elementary school is still, as it has been, to give the fundamentals of education that are essential to intelligent citizenship, and it ought to be clear that a boy or girl in the elementary school who is not planning to go to the high school may be pursuing just as worthy an aim in life—even as high an aim—as his classmate who expects to graduate again after four years more in the higher studies. It is readily understood by one who makes a study of individual differences in children, as well as home and industrial conditions, that some pupils may do better than to go to the high school. If this is the case, why not estimate the efficiency of the elementary school in terms of the efficiency and number of its graduates who go out into industry as well as in terms of the number who go on to the high school? Why not have school reports include a statement of what becomes of graduates who do not go to the high school, the character of the industries they enter, and their success in these industries? Why not be as proud of the fact that you have helped Johnny to acquire practical, marketable efficiency, or that you have led him past the blind-ally occupations to one in which he is sure to rise and become a useful citizen, as that you have landed his classmate over the threshold of the next higher school in the series leading up to the University? Let us not admit by our records and reports that the elementary school has lost its common school ideal.

Bad Habits Formed at School

Employers find fault because children lack seriousness, application and accuracy when they come out of the elementary school. It is probable that men often expect more than is reasonable of immature children, but it is also more than probable that habits of inattention, lack of concentration, continuity of effort and thoroness are sometimes formed in the school. A monthly program so arranged as to merely touch a thousand bits of unrelated subject matter once, and this repeated month by month is not conductive to the formation of the best habits. A bit of this and a bit

of that—constant change, and hurry to keep up with a badly constructed outline is too characteristic of some subjects in many schools. It is especially true of the newer subjects of the curriculum, because the time given to these is too short, and because there is a constant effort to "make a showing" at the end of the term. To illustrate what is meant by the badly constructed outline we have but to refer to the familiar method of constructing an outline for work in drawing for one of the grades in the elementary school. The procedure is about as follows: First it is decided to teach construction, representation and decoration, or some other three or more divisions of the subject of drawing. Then the school year is divided into months, and in each month is placed one or two problems under each of the sub-topics. Only one lesson a week is given, with the result that a child gets a start in construction, for example, about once a month but there is no continuity of effort in that division of the subject, and he gets nowhere in particular at the end of the year. The same is true of each of the other subdivisions. Far better results would come if each sub-topic were taught continuously for three months before a change were made. Then something definite might be accomplished in each division of the subject.

An Illuminating Experiment

Another illustration is found in the usual method of teaching woodworking and drawing in the grammar grades. It has been considered desirable by many teachers to keep mechanical drawing and woodworking running parallel in these grades, and so they have taken the first part of each lesson for drawing and the last part for woodworking. The result has usually been to dissipate energy both on the part of the teacher and the pupil. This is true even where two and one-half consecutive hours are given to the work, as has been clearly demonstrated in experiments covering two years at Oak Park, Illinois.

Ira S. Griffith, until recently the director of manual training, became conscious of the fact that the boys liked the woodworking much better than drawing. During the drawing lessons he found it difficult to hold them to their work because they were constantly tempted to handle the woodworking tools which were at the benches where the drawing also was being done. Their minds seemed to be irresistibly wandering to the woodwork. As an experiment he took the first eleven weeks of the school year 1910-11 for drawing only. He put away the wood-

working tools and made the shop appear as much like a drawing room as possible. The result was greatly in favor of the new plan. Interest was easily maintained and the improvement in the technique of the drawing was almost phenomenal. But this was not all. When the shopwork was taken up the pupils were ready for it. They had their drawings and their stock bills completed and they knew exactly what they wanted to do. From the beginning to the end of the year the work was so great an improvement over that of previous years that the result of the experiment was certain. A second year's experiment still further verified the conclusion that continuity of effort in one line of work is what brings the desired results. We ought to have learned this from our study of psychology long ago, but some of us did not.

Another experiment has emphasized the same fact. One hour a week was allowed for a grammar grade practice-teaching class in woodworking that came to Bradley Institute from one of the Peoria public schools. The time was so short that it was impossible to get the results desired in habit formation. The interest, too, lagged somewhat toward the end of the year. The experiment was tried of having the class come to the shop two hours a week for a half year. The results thru two years have been gratifying.

In many cities and towns we believe far better results would obtain in grammar grade woodworking if twice as much time per week for a half-year were given to the subject, or even three times as much time for a third of a year instead of the present sixty or ninety minutes once a week. The teacher of woodworking could then at least know all his pupils by name and perhaps even become acquainted with a few of their individual tendencies. Moreover, the pupils would then feel that they were accomplishing something definite. As a result they would undoubtedly want to continue the work thruout the entire year. That need not deter us. Let them make known their desires to their parents and to the school board. Perhaps they would be the best possible agitators for reasonable time for shopwork instruction.

A Revolutionized County Institute

An interesting experiment, the results of which are likely to become far-reaching has just been made by John A. Hayes, superintendent of schools in Peoria County, Illinois, and his assistant, George F. Kimzey. Instead of carrying on the annual institute in the usual way it was decided to make an entirely new program this year—one in which the manual arts would

constitute a large part of the work. Fortunately this was easily possible because for several years past the County Institute has been held in the main building of Bradley Polytechnic Institute. The change necessary to include the manual arts was not, therefore, one involving difficulties of equipment. There were two fundamental ideas in the change: One was to do more intensive work in whatever subjects were taken up, and the other was to give work in the manual arts a fair trial. The daily program was therefore entirely revised. During the first hour and a half each morning all the 300 teachers were together receiving instruction in history and music. For the next two hours they were divided into four sections. They were allowed to choose between drawing, agriculture, woodworking, or art metalwork. After luncheon one hour was given to history and music and the following two hours to one of the manual subjects, but not the same one taken in the morning. The program was continued for the five days of the institute, each member taking two manual subjects only.

Among the results observed were the following: First, the teachers' interest in the institute was far greater than ever before. Heretofore many teachers have attended just as few sessions as possible, and they have left immediately at the close of the lectures. This year everybody was so interested in the work that they wanted to attend every session and were loth to leave at its end. Second, before the end of the week came many of the teachers were planning to introduce such work into their schools. This was so general among the teachers that the Superintendent says he shall have to caution them not to go too far in that direction the first year. Third, the Superintendent is already arranging for "follow-up work" to be done by special teachers who will go to some of the schools once a week to give instruction in woodworking to the larger boys. This is an extension of the work that has been done in several schools in the country during the past year under the supervision of the originator of the circuit special teacher idea, Professor Clinton S. VanDeusen. Fourth, Superintendent Hayes has asked each of the instructors in this institute to write a report of his own work and has caused some photographs of the classes to be taken. These will be included in an official report which will be ready in October and will be distributed free to persons interested in the details of the plan.

The total result is a thoro awakening of the teachers of the county to the possibilities of a new type of country school work. The Superintendent is enthusiastic and it is believed that the people will be glad to

support him in this new departure. He is already planning a similar program for next year.

The Joy of Work

To our English correspondent, H. Williams Smith, we are indebted for the following clipping from an English newspaper:

Sir Gilbert Parker, M. P., after presenting the prizes at the Leys School, Cambridge, yesterday, expressed the opinion that though boys were better equipped in general learning nowadays, yet as a nation he did not think we were as thorough as we used to be. Steam and electricity, machinery and the product of machinery which imitated artistic handicraft, had cheapened taste and made cold the love of work for work's sake in the field of nearly all the arts and crafts. In the past even the unskilled worker had his share of the universal pride, but he too had receded as the man just above him had become more material and less craft-loving. If there was one cry which rose more often than any other in the minds of those who cared for the best in national life it was the renewing of the pride and joy of workmanship. One loss aways brought another, and when pride of workmanship faded imagination failed. There were people who would consider this no loss, but it was because they associated imagination with romance, and that was childish and erroneous. Imagination was the inspiration of all progress. All men who had done big things had in the true sense been dreamers as well as workers. "Find a boy," he concluded, "that broods and dreams as well as works and plays and you must keep your eye on him. If you will not cultivate imagination you will not get beyond the belief that all that glitters is gold; if you neglect it you may perhaps easily become a member of Parliament, you may even reach the giddy height of a Peerage, but you will not become a statesman or belong to that aristocracy which cannot be nominated, the aristocracy of the men who did things."

In commenting on the above in *The Schoolmaster* Mr. Smith says:

Sir Gilbert ranked himself with the true "seers" when he said, "If there was one cry which rose more often than any other in the minds of those who cared for the best in national life, it was the renewing of the pride and joy of workmanship." Now, you cannot feel pride and take joy in slipshod work, or stereotyped work, or sweated work; pride and joy can only accrue when the work is of the best, and done under the best conditions. Surely the economic conditions for doing the best work exist in our schools if anywhere; and if we make every just allowance for the product as being "boys' work" we still have a right to expect that that work shall be the very best that boys can do. If in school we make our boys faithful over the few things, we have done our share in preparing them to become rulers over many things.

No part of Sir Gilbert's address could be read with greater profit by manual teachers than that part where he pleaded for the cultivation of the imagination. He is one of our great romancers, and it is good to have such a man say that to

associate imagination only with romance is childish and erroneous. "Imagination," he says, "is the inspiration of all progress. All men who do big things are in the true sense dreamers as well as workers." School handwork untouched by imagination is one of the most barren of rituals, one of the most formal of all formal studies. While we duly and properly grind away at the disciplinary work and the essential technique which form the indispensable basis of educational handwork, let us ourselves rise frequently and carry our pupils with us to a contemplation of the heights of human achievement, which in the arts and crafts have done greater things than war or politics have accomplished for the advancement of mankind.

Significant Change in Germany

Anyone who has attempted to follow the progress of manual training events in Germany during the past few months must have noticed especially the broadening of the activities of the German Society for the Promotion of Boy's Handwork, and the consequent change in the name of its journal from the *Blätter für Knabenhandarbeit* to *Die Arbeitschule.* After twenty-five years of effort in behalf of manual training for boys the German Society finds that its field is too narrow. Girls must be taught handwork as well as boys, the manual training principle is affecting other school subjects and is influencing the instruction in schools of art and industry. The scope and aim of educational handwork has been constantly enlarging until now it seems essential that the Society give recognition to all the factors in the complex development of which it has been an important part, and invite them all to cooperate in its journal. *Die Arbeitschule* aims to cover all phases of education in which the child gains knowledge and skill thru work with his own hands.

This change brings to the assistance of Dr. Pabst, the eidtor, several of the leading German educators who have had to do with the broader problems of handwork instruction. Among these we notice the name of Dr. Kerschensteiner of Munich. The new journal invites to its support all men and women who have had experience from which they can speak. "We shall not fix narrow boundaries," says the editor. "Every standpoint will be represented and every new worthy idea will be given a hearing. The entire province of education thru practical work is our field." Americans will watch for the real significance of this action. Can it possibly be true that while we are trying to imitate Germany by making our education more vocational, Germany is trying to imitate us by making its education more broadly cultural? If so perhaps the ultimate results will be quite similar.

Professor Bawden Goes to New York

We are sure readers of this magazine will be interested in the fact that its managing editor, Professor William T. Bawden, has just completed plans which will enable him to spend two years in post-graduate study at Teachers' College, Columbia University, New York City. He has given up his desirable position as assistant dean of the College of Engineering at the University of Illinois in order to take advantage of a long-desired opportunity for advanced study. Professor Bawden's power of organization, his mastery of details and his good comradeship have won for him an unique place among the manual arts people of the Central States. He will be greatly missed, even for a year, and especially so at the present time when he has just been made chairman of the new Council of the Western Drawing and Manual Training Association. But his decision to do post-graduate work in school administration and industrial education is quite in harmony with his past record. He was graduated from Dennison University in 1896, receiving the A. B. degree in the classical course. He taught common branches a year in Iowa, and then went to the Mechanics Institute in Rochester where he took the special course for teachers of manual training. After teaching manual training at Elmira and Buffalo, N. Y., he spent the year 1902-1903 at Teachers College, New York, specializing in manual training and earning the B. S. degree. Now after seven years spent in building up the manual training department at the Illinois State Normal University and two years as assistant to Dean Goss of the University of Illinois he goes a third time from successful teaching to advanced study. Our only consolation is in the fact that the *Manual Training Magazine* will have an active representative in New York City for the next two years.

—C. A. BENNETT.

"Let him learn to take a straight shaving off a plank, or draw a fine curve without faltering, or lay a brick true in its mortar, and he has learnt a multitude of other things which no lips of man could ever teach him."—RUSKIN.

ASSOCIATIONS

WESTERN DRAWING AND MANUAL TRAINING ASSOCIATION.

The nineteenth annual convention of the Western Drawing and Manual Training Association was held in the Woodward High School, Cincinnati, Ohio, May 1-4. There was a larger attendance than for several years past; much enthusiasm was shown in the discussions, and interest in the exhibits.

As a result of ill-considered appropriations the previous year, the Association faced the prospect of an indebtedness that would seriously cripple its activities. But the increased membership and economical management put affairs again on a good footing. The chief credit for the improvement in the financial situation is due the Program Committee, and especially its efficient Chairman, George F. Buxton, Menomonie, Wis. The experience of this Committee in providing an exceptionally strong program at an expense to the Association lower than any other for some five or six years past is worth careful study by other committees charged with similar responsibilities.

One of the newer features of the convention, the annual banquet, presents numerous problems, both because of the number of guests to be accommodated and the variety of interests represented. It has been tried twice, and judging from the attendance the banquet has made good. With each year's experience the arrangements can be perfected, and all objectionable features eliminated.

In addition to the opening session and the banquet, the plan of the program included the following: (1) General sessions: Vocational Aspects of Art and Manual Training; Art Applications; Commercial and Household Arts; Vocational Education; Address and Question-Box. (2) Round Table discussions: Art Education; Manual Training; Household Arts; Vocational Education. Following are brief extracts from four of the addresses that attracted particular attention.

"Experiments in Semi-Industrial Schools," by Wilhelmina Seegmiller, Indianapolis. "The supervising principals of the eight semi-industrial schools which have been established in our city, and the directors of the departments of domestic art, manual training, and art, have been meeting in a series of conferences. We have formulated our views, and I speak for all in reading the general and specific statements which at our last meeting, a week ago, we decided represents our creed, in so far as we have one."

GENERAL STATEMENT.

The Semi-Industrial work in the grammar grades of our schools is an attempt to adjust the school activities more nearly than heretofore both to the child's individual interest and to his social needs. The problem is only in the process of solution and any statement of aims and methods at this time must be regarded as merely tentative.

1. Our point of view is that the school should partake essentially of the nature of the small community, a place where children may live together, and in living together, so far as possible acquire the social attitudes and make the social adjustments essential to a well organized society. To this end the aim should be to provide a large measure of cooperative activity and to promote at all times the real community spirit.

2. It is not our belief that merely having the children do work with their hands is educative but that this manual activity should be the working out of the child's own interests, an expression of his own constructive thought, and a realization of a definite purpose which is his own.

3. The aim is not to give trade training, but to provide a wide range of activities to the end of developing a degree of skill therein and an interest in, and insight into, a variety of materials and processes. This will afford an intelligent basis for taking up any one of a number of vocations, as well as for giving a sympathetic and broader vision of life as a whole.

4. The thought is not that the semi-industrial activities shall be regarded as a substitute for the activities of the conventional school but rather as a means of vitalizing and liberalizing the curriculum.

5. Altho books are held always subordinate and supplementary to experience, the importance of book work is not lessened. Manual activity should afford a basis for the interpretation of the material of the book as well as for its application. The book on the other hand should illustrate the problem and supplement the experience of the extra-book activities. The one provides individual experience, the other brings to the children a heritage of racial experience. The two thus mutually reinforce each other.

6. We believe that a wide range of manual activities and the initiation of a variety of mental processes provided for will enable children to find themselves and reveal to teachers and parents their individual powers or gifts. This is important as a factor in vocational guidance.

SPECIFIC STATEMENTS.

The maximum number of children in a class should be twenty-five.

From one-third to one-half the time is devoted to semi-industrial activities, viz: shopwork, printing, mechanical drawing, design, household economics (cooking, sewing, etc.).

Approximately one-half the time in these activities is given to individual projects, and one-half to group or class projects.

The projects for both boys and girls should vary sufficiently to meet the individual interests of the children.

The length of time required to complete a project is an important element. If the time is too prolonged, the interest of the child is likely to lag.

The standard of the finished product is determined by the capacity of the child rather than by that of the adult.

The education of the child is the primary aim; the finished product is secondary.

Machinery and modern appliances are introduced for two reasons: first, to do the work which would otherwise become purely manual labor; second, to make possible a greater variety of projects.

The nature of these semi-industrial activities should be determined by the interests of the community.

Since the test of the value of all knowledge is its application at some time in the child's experience, he shall learn how to make the greatest possible use of his knowledge while he is with the teacher. Merely following directions is not real application of knowledge; the child must act upon his own initiative rather than upon that of some one else.

Mere manipulation is subordinate to thinking; mere skill, secondary to intelligent doing.

To make an intelligent consumer is no less important than to develop a capable producer.

The social and civic values of these semi-industrial activities should not be over-shadowed by the economic values.

These activities should be supplemented and enriched by a large amount of related informational reading.

The education of the child consists in an organic unity of his experiences. The real cooperation of all teachers, academic and industrial, is vital to the accomplishment of this end.

"Some Problems of Technical Education," by principal William J. Bogan, Lane Technical High School, Chicago.

PLANS RECOMMENDED.

To improve conditions one of the first recommendations usually made is that the compulsory school age be raised to 16 years. This is a reform that must come before many years. It is a reform that is vital to our school system, but unless there is a radical change in our school courses the increase of the school period will only add to our troubles. The essential thing at the present is to vitalize the course of study so that pupils and parents may see the necessity for more schooling. When that happy stage has been reached the lengthening of the school period will be hailed with joy by pupils, parents, and employers. * * *

Another plan that is coming to be looked on with great favor in the West is expressed by the following resolution adopted at a recent conference of high schools in cooperation with the University of Chicago:

"*Resolved,* That the public secondary schools should admit to their courses pupils of high school age even when such pupils have not had all the requirements usually imposed on secondary schools, provided that pupils can benefit by work given in these courses." * * * * *

These and other plans depend for their fulfilment upon the intelligence, energy, and breadth of view of public school teachers of all ranks, but as one surveys the field of technical education whether in elementary or secondary schools one cannot avoid the conclusion, much as it hurts professional pride, that one of the greatest obstacles to improvement is the conservatism of educators.

This is a force to be reckoned with, for as shown by the experience of Massachusetts, vocational education cannot be carried on successfully by an educational system independent of the regular public school system. How to convert the great body of teachers and their leaders to a belief in education for all the children is a task whose bounds none can see, but whose importance every friend of vocational training must realize.

The first step necessary in this process of conversion is to secure advice

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outside the schools from those best equipped to give it. On the newer types of education we need advice from employees and employers. In the large cities of the East advisory councils are asked to assist in forming new courses and planning new buildings, but in many of our western cities there is an aloofness on the part of educators that resents outside effort as unwarranted interference, more's the pity, for one of the splendid features of industrial education is its rejuvenating effect upon educators. * * * * *

Why we, an agricultural and industrial people, living in an industrial age should scorn the means to our economic salvation while we pursue the will-o'-the-wisp known as conventional culture is one of the strangest of strange phenomena. The veneration in which book learning has been held has been partly due to its association with the holy men of God, and partly to the fact that the scholar has had entire control of the means for disseminating rumors of his own profundity. The advent of science and invention, however, has had a tendency to glorify the man of brawn plus brain until now the demand for culture in its narrow sense is growing fainter and fainter. In fact, we are coming to believe that it is one of the duties of the school to hasten the day when no man will be considered cultured who cannot work efficiently with his hands.

LESSONS FROM GERMANY.

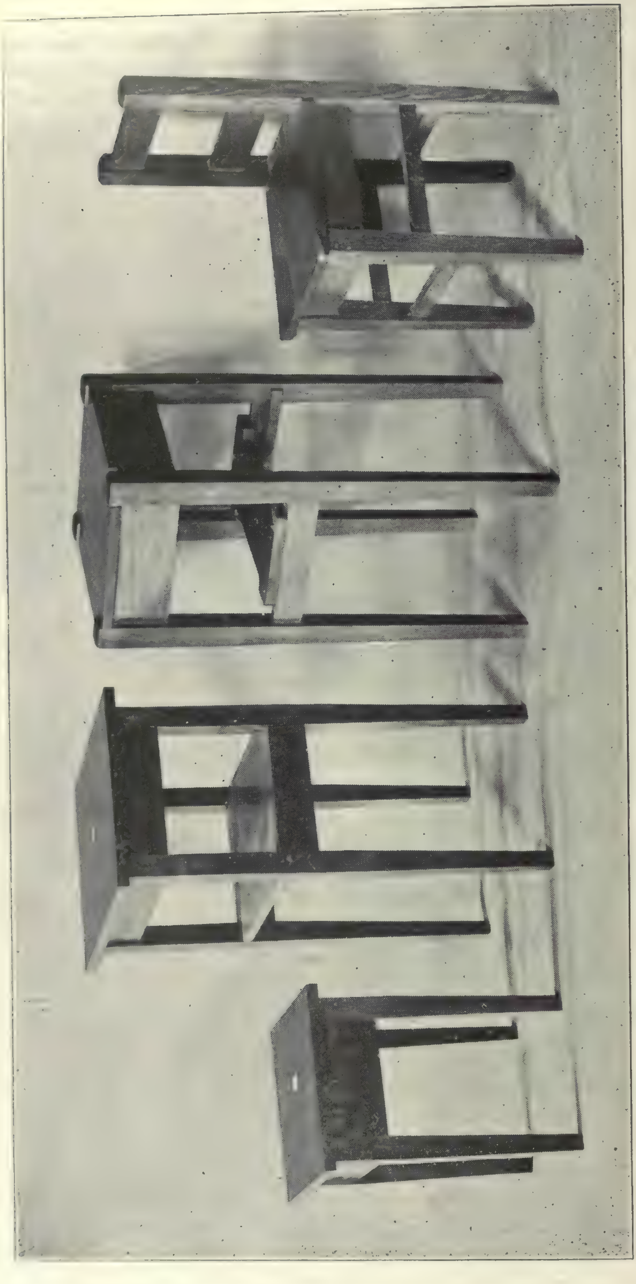
"Lessons from Germany for Boys of High School Age," by Dr. Edwin G. Cooley, Educational Adviser for the Chicago Commercial Club.

It seems as tho people in America believe that when they have compelled the boy to attend the elementary school until he is fourteen, and then offered him an opportunity to continue his academic instruction, or possibly his mental training in the secondary school, they have done their full duty by him. Germany says that a system of compulsory schools that takes a boy up to fourteen, just to the time when new impulses and new interests are arising, just to the time when parental control is relaxing, just to the time when most can be done toward fixing his character, and then turns him loose in the world, in the streets, in the factory, is very illogical; that if a compulsory system of attendance at school is logical at all it should extend over this period of adolescence up to the time when the boy is seventeen or eighteen years of age. We should then provide as liberally as possible for the training for such youth during the entire period from six to eighteen. The one who is able to go to the ordinary secondary school does not need our attention; he is already provided for. The one who must go to work at fourteen should also be taken care of as well as possible. * * * * *

The German position is that the shop alone cannot teach a trade, but that both shop and school are necessary. I am inclined to think they are right in that contention. The master in the ordinary shop in Germany or America has too little time, and perhaps has not the qualifications necessary, to teach the theoretical side of the trade; to teach the things that the boy ought to know; the various subjects that the German includes in this examination. The German master is, therefore, very anxious for help. As a result the employing class are, as a rule, behind the movement to supplement the system of apprenticeship by the system of continuation schools. It would be a great mistake to forget that these schools are a supplement to apprenticeship, not an independent system that undertakes the whole vocational education of the boy. * * * * *

There is no continuation school system that can long continue successful that relies on teachers whose main interest and business is teaching in another kind of school. The continuation school teacher must be a teacher whose whole life and purpose is to work in those special schools. Critics measure the success of a German city in its continuation school work first by the proportionate number of teachers who are teachers in the continuation school only, and, second, by the relative number of teachers who come directly from the trades. When they have a school running all the time, it is comparatively easy to secure a force of teachers to teach all the time, and to induce men from the industries to leave the industries and become teachers. Every teacher who comes in from the schools is required to learn something of the industry, and every teacher from the trades to learn something of pedagogy, certain subjects being invariably turned over to the practical men from the industry, and others being taught by the professional teacher. * * * * *

It should be remembered that Germany has no national system of education, and this matter of the industrial schools is left largely to the communities. In Germany there is a general system of trade regulations but the matter of organizing schools and determining the kind of school it shall be is left to the community. All sorts of experiments, all kinds of schemes, have been tried, each of them being an attempt on the part of the community to satisfy its own needs, and all of them being based on the belief of the German—that education pays.



TELEPHONE TABLES AND CHAIR—HIGH SCHOOLS, CINCINNATI, OHIO.

How thoroly they believe this is shown by the fact that industrial schools are supported by twenty-two of the labor organizations in the city of Berlin.

Dr. Kerschensteiner said: "I used to be greatly alarmed over the prospect of competition with America. It seemed to me that we could not resist American enterprizes, but I have carefully studied the matter and I have made up my mind that unless America changes her tactics Germany has nothing to fear from her. If America continues to capitalize her resources, skim off the cream of her soils, her forests, etc., instead of conserving them, and above all conserving her human energy, Germany has nothing to fear from her as a competitor."

ARCHITECTURAL DRAWING.

"What Should Be Included in a Course of Instruction in Architectural Drawing for the High School?," by A. C. Newell, director of manual training, State Normal University, Normal, Illinois. In this address was given a careful analysis and a comprehensive outline of the subject matter that should prove especially helpful to teachers. The conclusions are as follows:

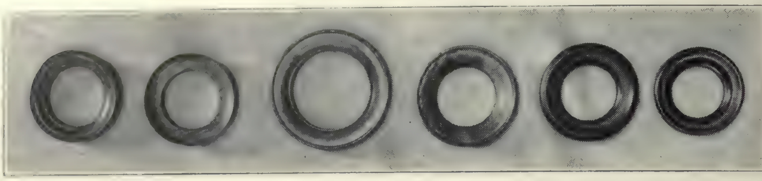
The details of what to learn in a high school course in architectural drawing and the best methods of teaching it, are at present, in an unsettled condition. It will take a number of years of hard study on the part of a large number of teachers, with conferences and criticisms of each other's work, before a more uniform course in architectural drawing can be adopted by our teachers of mechanical drawing.

The experience which manual training teachers have had in the past has led to some rather definite conclusions in reference to teaching shopwork. Neither the Sloyd system nor Russian joinery has proved to be the best method for teaching in our American schools. We are now beginning to have courses in shopwork that are more uniform in aim and method, altho different in details. We now see that shop courses should have a subject content of their own, that the work at the beginning and in the grades should be *general* in character and educational in purpose, and that further on it should be more *vocational* in nature. We also know that the teaching should be carried on according to good pedagogical principles, and all of us realize that we have been very slow in discovering methods of teaching that are psychologically sound.

We should keep in mind the important discoveries already made in the shop and drafting rooms in connection with high schools. A course consisting largely of detail drawings of architectural parts corresponds to Russian joinery in the shop. A course in drawing classic types or buildings foreign to our American needs might correspond to the Swedish Sloyd of twenty years ago. Thinking teachers ought soon to agree that our courses should not be too technical, but ought to cover a rather wide scope, and should include as much of the educational as possible, at the same time leading strongly toward the vocational, and the methods and practice used by professionals.

The emphasis should be placed on the drawings of buildings that are common in the locality, with the thought of design, both structural and ornamental, constantly kept in mind. The greatest good will probably come to the student from working out the complete plans, elevations, details, specifications, bill of

materials and perspective drawing of a house which will interest him and members of his family at home. Such a course should be given in about two years' time, working one hour a day, or in one year with double time, if taught in the junior or senior year of the high school course.



PICTURE FRAMES DESIGNED AND MADE BY BOYS OF HIGH SCHOOLS, CINCINNATI, OHIO.

BUSINESS SESSION.

Much important work was done at the annual business meeting. The report of the Committee on Reorganization of the affairs of the Association was approved, with certain modifications, carrying with it the adoption of a new Constitution and By-Laws. The most important change is the formation of a permanent Board of Directors, to be known as the Council, which is specifically charged with the responsibility of studying such problems as cannot, in the nature of the case, be carried thru to satisfactory solution by one set of officers in a single Association year.

The officers for the ensuing year are: president, Emma M. Church, School of Applied and Normal Art, Chicago; vice-president, Ira S. Griffith, Bradley Polytechnic Institute, Peoria, Illinois; secretary, Wilson H. Henderson, director of vocational education, Hammond, Indiana; treasurer, Miss Charlotte Ulrich, Cincinnati, Ohio; auditor, Mott J. Scherer, St. Louis, Mo. The members of the Council are the president and secretary, *ex officio,* and the following: Miss Florence E. Ellis, supervisor of drawing, Cleveland, Ohio; Miss Lucy S. Silke, supervisor of drawing, Chicago; Fred D. Crawshaw, University of Wisconsin, Madison; Carl N. Werntz, Chicago Academy of Fine Arts; William T. Bawden, New York.

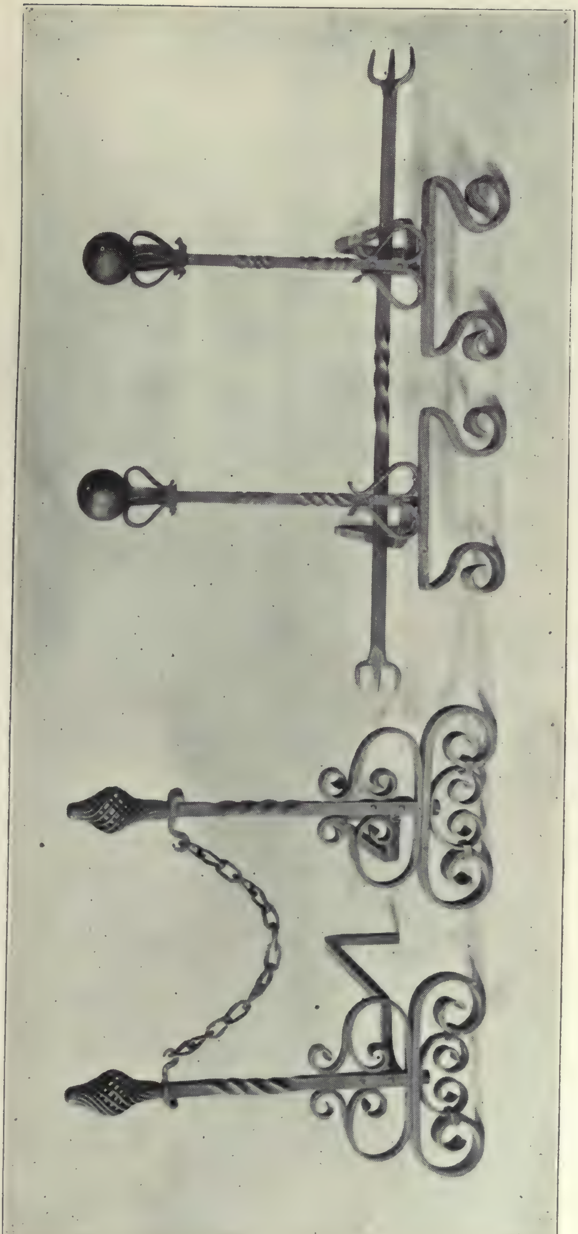
The next meeting of the Association will be held in Des Moines, Iowa, in May, 1913.

—William T. Bawden.

NATIONAL EDUCATION ASSOCIATION.

The fiftieth annual convention of the National Education Association was held in Chicago, July 6th to 12th, and its program contained many papers and addresses of special interest to workers in the field of the manual arts.

In the President's Address, Superintendent Pearse, Milwaukee, called attention to the fact that the organization of our public school system is based in large part on conditions that no longer exist. For example, there is no longer any controlling reason in the everyday living conditions in our cities and towns for a school day beginning at nine o'clock and closing at three-thirty or four, or for



MADE AT WOODWARD HIGH SCHOOL, CINCINNATI.

a school year beginning in September and closing in June. The solution of the difficulties presented by the insistent demand for the introduction of the newer and more practical lines of work into the school lies in the direction of lengthening both the school day and the school year.

Beginning at the fifth or sixth grade these special lines of work should be in the hands of specially trained teachers. During the time when the children are under the direction of the special teachers the regular teachers should be relieved of all room duties in order that they may give attention to other work that they would ordinarily do at home in the evening. Thus the lengthened school day would not add anything to the burden of the regular grade teachers, which is already heavy enough. The introduction of the proposed new forms of school activity will make the program sufficiently varied and interesting to satisfy all requirements from the standpoint of the child.

"Citizenship in Industrial Education," and "The Relation of the Elementary School to Subsequent Industrial Education" were the topics discussed at the first session of the Department of Manual Training and Art. The speakers were C. B. Connelley, Carnegie Institute of Technology, Pittsburg; W. T. Bawden, University of Illinois; C. A. Bennett, Bradley Polytechnic Institute; Paul Kreuzpointner, Altoona, Pa.; Emory Filbey, University of Chicago. A. L. Williston, Wentworth Institute, Boston, presented the Report of the Committee on College Entrance Requirements. In the discussion Mr. Kreuzpointner said: "We men of the industries who are under daily obligation to adjust to our work the material received from our schools, appreciate the willingness of the educators to have the elementary school take part in the work of preparing those who are destined to enter industrial life direct from the elementary school.

"If we trace the effect of present day educational endeavor upon the various social forces of our national life, as these forces act and react upon each other, we find that the readjustment of the elementary school in the direction proposed would benefit society at large even more than the industries would be benefited; because by so doing industrial education would be raised to that higher level of ethical and intellectual efficiency and broader social usefulness which this form of education must eventually occupy in our national life. If we retain our present conception of the function of industrial education as simply an instrument to increase output and to furnish the means to a comfortable material existence, then we endanger our civilization by the appeal to the selfish instincts of the employer and the employe, eventually producing a state of mind which will react injuriously upon the industries and society alike."

At the second session the papers were: "The Significance of the Industrial Arts in the Schools," by C. A. McMurry, State Normal School, DeKalb, Illinois, and "Sociological Phases of Industrial Education," by F. M. Leavitt, University of Chicago. Professor Leavitt said: "Today, when universal education is our aim, 'bread and butter' education for the masses of mankind will tend to bring the masses and the classes closer together, to secure unity in diversity by giving each a more genuine appreciation of and respect for the other. So far from being sordid and basely utilitarian, it represents one of the finest ideals which the human mind has conceived, and sets forth a philosophy of life which can be fully realized under no other conditions than complete solidarity. * * * * *

INDUSTRIAL EDUCATION AND CRIME.

"Another sociological phase of industrial education is its relation to crime. That industrial education is to have an immense influence in preventing juvenile delinquency is the belief of those who have studied faithfully the lessons taught by the reform schools and penitentiaries. Certainly nothing could be of greater social significance than the reduction of crime, and especially crime for which society, rather than the delinquent, is mainly responsible. * * * * *

"If education learns to dignify all vocational life by giving it consideration in its various forms and relations, who shall say that this will not have a profound influence in helping us, as a nation, to develop a unity of purpose out of the wonderful opportunities which our country affords, and of which we are justly proud, and which in a social democracy should somehow be made to administer to the common good?"

The program for the third session included: "The Needed Changes in the Manual Arts," by F. D. Crawshaw, University of Wisconsin, and "Introduction of Technical Subjects in the Eighth Grade," by W. H. Henderson, Springfield, Illinois.

Professor Crawshaw presented the results of a series of studies of the manual arts in the public schools extending over a number of years. The following is a brief summary of the conclusions reached:

Considering some of the most important "differences between the traditional form of manual arts as it is usually conducted and the vocational form for similar grades and ages of individuals: (1) From two to five or six times as much time is devoted to the shopwork in vocational schools as to that in manual arts departments in regular schools. (2) The academic work of the vocational school is given less time than in the regular school and it always is of the applied type. (3) In the vocational school boys and girls are segregated in classes which consider only those branches of work which the members of the group may follow as an occupation. (4) Individuals of both sexes are given the advantage of vocational guidance, so that those wishing a specific training may receive it without loss of time and effort. (5) While different methods of doing work are used in the vocational schools, sometimes resembling closely those of the ordinary manual training shops and sometimes those of the apprentice shop in a factory, the general conduct of the work in the vocational schools follows closely commercial practice. * * * * * "

With particular reference to these points of difference the following "needed changes in the manual arts under ordinary public school conditions" were proposed: "(1) There should be an industrial significance given to the materials used in the lower grades. * * * * * (2) In the upper grades more time must be secured—not less than two and preferably three times what is now ordinarily given to manual training. (3) Besides the greater amount of time in these grades, there must be ultimately an opportunity in this period for a certain degree of specialization, or better an intensification, of effort upon handwork with possible future vocations serving as a guide for selection of subjects. (4) In this upper grammar grade specialization we must have much greater effort in the direction of adult standards. By this I mean that we should do things not

in the 'play-at-it' or amateurish way but in the way men do similar things for which they receive their daily wage. * * * * * (5) In the public high school manual arts departments there must be opportunity for specialization from the first day of the first year on. * * * * * (6) For those pupils who will continue in high school thru the four years the specialization of the first two years is not desirable, at least not in such great measure as for those who will leave to go to work at the end of the freshman or sophomore year. For that portion of the class who are likely to go on into college work I should not recommend manual arts beyond the sophomore year. For all others, however, those who will complete the high school but who will then enter some wage-earning occupation, the last two years at least must be specialization years. * * * * *

"The theory advanced in this paper is simply this: Give sufficient time to the manual arts from the beginning of the sixth grade on thru the high school to make it vocationally worth while. Introduce methods which will give pupils a real knowledge of work as it is actually done under commercial conditions, when these conditions are good. Break down, to some extent at least, the pedagog's standard of sequence of models and iron-clad progression in tool exercises, and likewise break down the standard of sequence of subjects. * * * * * We need a change toward greater latitude in selection of subjects and closer application to commercial standards—a change which does not mean revolution, but evolution; a change likewise which does not mean discarding the good we know exists in manual training, but rather the retention of all this, and the addition of all that is good and practical in vocational education. Such a change means new and continued life for the public school manual arts, and extended opportunities for them to do what may justly be expected of them."

OBJECTIONS ANSWERED.

In discussing the second topic Mr. Henderson outlined some of the objections to the introduction of technical subjects in the eighth grade and answered them. He said in part:

"Under the conditions that exist, it is obvious that to reach the children who are most in need of technical training, we must introduce it in the elementary school. But at once it is protested that we must not shorten the period of childhood, that childhood is a refuge and should be guarded; that fourteen is too young for specialization and a child at that age is not mature enough to choose his career; that it is child labor; that if the child is given skill the factory will claim him all the sooner; that it is contrary to our American principle of equal opportunity; that it is impossible and impractical because 98 per cent. of the teachers in our schools are women who have no knowledge of technical subjects; furthermore the preadolescent child has neither the judgment nor the physical strength necessary for this training.

"Viewed superficially these may seem to be valid objections, but with the idea in mind that the schools are maintained for the good of all the children of all the people, I should like you to consider them in the light of present conditions. First: 'We must not shorten the period of childhood; childhood is a refuge and should be guarded.' Childhood *should be* a refuge where, guided and protected,

the child is taught to protect and care for himself, so that when the protection is withdrawn it will not be needed. Childhood is a period of helplessness, and during that period many a child comes to school hungry and half-clothed, while the mother washes or scrubs for a dollar a day. Is it right that we prolong that period of helplessness, or should we teach the child something by which he may feed and clothe himself and so relieve the mother?

"Then: 'Fourteen is too young for specialization, and a child at that age is not mature enough to choose his career.' This may be true, but we must meet a condition and not a theory. These children are now specializing when they go to work at fourteen, and they have no choice of careers. They must take the work they can get, liking it or disliking it, fitting or misfitting. The boy or the man with no skill or technical training has a hard time making a bare living, but a boy with proficiency in a skilled occupation can choose his own career.

"Next: 'It is child labor.' Does labor cease to be child labor at 13 years, 11 months, and 29 days of age? These children do go to work 9 hours a day, 6 days a week, at 14; and what we are proposing is to have them work 3 hours a day, 5 days a week, under competent instructors, so that when they go to work their labor may be a little less irksome and the pay a little better. The term *labor* signifies work that is unpleasant or disagreeable to the worker. It gets its significance from the state of mind of the worker. With this idea in mind compare, from the boy's standpoint, the work that is now done in the eighth grade with what is proposed, and decide which is child labor!

" 'If the child is given skill, the factory will claim him all the sooner.' Remember that the factory is now getting him at 14, and the law will not allow it to get him any younger. A school which will take the child at 14 and give him a two years' course leading to skill and proficiency in some occupation, will keep the factory from getting him until he is 16, whereas it now claims him at 14.

" 'It is contrary to our American principle of equal opportunity.' On the contrary, it is contributing toward giving every child an equal opportunity. At present the boy who must go to work at 14 has no opportunity to prepare for the work he is to do. The child who can remain in school long enough to prepare for a profession has every opportunity. The United States Government will board, clothe, and teach a trade to an Indian boy of 14, and some states and charitable organizations will do as much for a negro boy; but the only way for a 14 year old boy of poor white parents to get the opportunity to learn a trade is to commit a crime.

"Finally: 'It is impractical and impossible because 98 per cent. of the teachers are women.' If, as some persons think, we have too few men in the elementary schools, this might be a good way to get more of them there. Our schools do not exist for the good of the teachers, and if the welfare of the children requires that there shall be more men teachers in the elementary schools, they will be there. To state that it is impossible to give technical training in the elementary school seems folly when it is noted that there are about fifty schools in the United States that are giving such training to children 14 years of age, when a majority of the pupils in the eighth grade are over 14."

At the fourth session, in discussing "The Manufacturer's Viewpoint of Industrial Education," C. R. Dooley, secretary of the educational committee, West-

inghouse Electric and Manufacturing Company, Pittsburg, described the courses of training provided by this company in order to meet the demand for trained workers in the industry. These include: (1) A course open to graduates of technical schools; the time is two years, the first of which is spent in the manufacturing and testing departments, and the second in the particular branch the student expects to follow. (2) A trades apprentice course, open to boys from the grammar grades and high school. (3) Technical night school classes, open to both men and women, without reference to previous education or employment.

The two remaining sessions of the Department were devoted to Household Economics and Art, respectively. The officers for the year 1912-13 were elected, as follows: President, Arthur L. Williston, director, Wentworth Institute, Boston; Vice-President, Lillian S. Cushman, University of Chicago; Secretary, R. W. Selvidge, professor of manual arts, University of Missouri, Columbia.

DEMANDS ON SCHOOLS INCREASE.

At the session of the Department of School Administration on Monday morning, Dr. E. G. Cooley gave an address on "Continuation Schools," in which he said: "A fundamental defect in our present school system results from our custom of terminating compulsory education at fourteen years of age. Every one will admit that this is too early. We are permitting our boys and girls to leave our public schools just at the time when they most need guidance and instruction, just at the time when character building really begins. Before the age of fourteen the youth is too immature to comprehend the training required by a citizen in a modern state. He has not the judgment and the power of resistance to temptations necessary for an independent life in modern society.

"The home has ceased to exercise the educational power which characterized it in the past. It has ceased to be the workshop of the parents; the father and often the mother are taken from the home by their daily work. The great cities and the great industries now take the youth almost immediately after the completion of the elementary school period. It is clear that great demoralization will take place if the care of society and the state does not take the place formerly occupied by the home, the parents, or the master in the trade.

"The demands on school education are, therefore, increasing with the advancing development of society. An increasing attention to the spiritual interests during these years of youth must be provided if the life of the modern laborer is not to be utterly demoralized and degraded by the sensual allurements of city life."

TRAINING IN PRACTICAL ARTS.

One session of the Department of Elementary Education was devoted to a discussion of "The Place of Training in the Practical Arts in the Upper Grades of the Elementary School as a Part of a Program of General Education and Vocational Guidance," with addresses by C. A. Prosser, secretary of the National Society for the Promotion of Industrial Education, F. M. Leavitt, University of Chicago, and John C. Brodhead, assistant director of manual arts, Boston. Mr. Prosser said, in part:

"The practical arts in the elementary school must not be made up of small amounts of a large number of different lines of work on the theory that the boy may thus test himself out in a number of different kinds of work and after two years, say at sixteen, make up his choice of vocation. The result of this policy is to give a smattering of knowledge in a number of lines, no one of which is worth anything at all to him in any occupation. Experience in Massachusetts has shown that 'testing out in series' is not only theoretically more sound but practically more efficient. The boy who takes up the work in the practical arts at fourteen should choose some definite line of work. If a few weeks or months of trial show that he and it are a misfit, let him change to some other.

"In order to make vocational guidance accomplish what it should, two things must be done: (1) Make provision for more thoro study of boys and girls at fourteen, in order that we may know more definitely what the problems are and how to deal with them. (2) See to it that vocational counselors are surrounded and supported by efficient advisory committees, made up of men and women who have the necessary knowledge of the industries and the personal qualities, sympathy, etc., to be of real help to the boys and girls. * * * * *

"Something must be taken back into the schools, for the years between twelve and fourteen, to take the place of the 'chores' and other home duties of the old days, in order to enable boys and girls to try themselves out in various ways before they reach the age of fourteen. The schools should avoid offering 'courses' in wood, metal, printing, bookbinding, etc. Instead there should be offered two years of *experiences in the practical arts,* consisting of series of 'jobs' involving as many and as varied activities and processes as possible.

"This program involves several changes from existing conditions: (1) Either a longer school day, or the elimination of a good deal of the work now being done. (2) The instructors who are to handle this work must have a more varied training than is now common. (3) The equipment must be entirely reorganized in order to provide a varied assortment of appliances, instead of twenty-five lathes, twenty-five benches, etc. * * * * *

"The dominant aim in all this work must be real life experience in the practical arts." —WILLIAM T. BAWDEN.

INLAND EMPIRE TEACHERS' ASSOCIATION.

At the annual convention of the Inland Empire Teachers' Association, Spokane, Washington, in April, a "Manual Arts and Science Section" was organized, and an excellent program was carried out, with C. A. Steelsmith, of Lewiston, Idaho, as chairman.

The speakers included: A. E. Winship, editor of the JOURNAL OF EDUCATION, Boston; Dr. G. Stanley Hall; Arthur H. Chamberlain, editor of the SIERRA EDUCATIONAL NEWS, San Francisco; Miss Josephine Berry, Pullman, Washington; Mrs. Grace M. Shepherd, Idaho; Professor E. J. Iddings, University of Idaho; State Superintendent L. R. Alderman, Salem, Oregon; State Superintendent Henry B. Dewey, Olympia, Washington; and others.

From the arguments brought forward one could easily believe with Superintendent Dewey that "hand training is the biggest thing in school work," and that "it is cultural as well as practical."

"The best crops which the farmers raise," said Superintendent Alderman, "are boys and girls. The boy needs to have something of his very own, a colt or a plot of ground for raising something worth while. The girls must have some of the modern housekeeping improvements. Parents are anxious to cooperate with the teachers, and many a boy will swell with pride because of his father's praise. The fairs of Oregon have stimulated an active interest in the raising of varied crops, and the $20,000 spent annually in every county in the state has produced remarkable results, tho it is still true that the farmer in the northwest has been buying what he should be selling."

Professor Chamberlain said: "There is a strong movement back to the farm, and a stronger belief in the dignity of labor. The course of study must 'hitch up' with the work of life. Go to the business man to learn what is the trouble with the school. Kill off nine-tenths of the present course; teach one-tenth, and emphasize it. Teach industrial and commercial geography and English with manual training. Employ special teachers; do not disregard accuracy; get thought power by stimulating thinking; and teach how to buy and how to spend."

Dr. G. Stanley Hall emphasized the fact that teachers must find out what prospective employers want, also what the individual child is fitted for. There is no child, however dull, that cannot learn something well, and the school must help each child to find out what that thing is. Dr. Winship expressed a similar thought, when he said: "The school must fit the child so that he can easily learn any of the trades. Teach the boy for *his* sake; and along with the carpenter's trade, teach him to read and write good English, and good manners and morals." Miss Berry took the girl's side of the question, and explained the real meaning of home-making, its relation to life, and the relation of other subjects to it. Many sciences—biology, chemistry, mycology, and bacteriology—are closely connected with it. Besides cooking and sewing, the pupils should study public and personal hygiene, proper combinations and costs of food and shelter, textiles, dyes, house furnishings and house construction. In the endeavor to supply to the child what the home does not, the teacher of household arts and science must be a woman of knowledge and experience.

At the next meeting it is expected to secure the cooperation in this Section of the teachers of art and the commercial branches. In the "Inland Empire" there are about 250 teachers employed in the manual arts. The states represented are giving University credit, as follows: Washington, two credits for industrial or manual training in high school, and one credit for work in agriculture; Idaho, two credits in manual training; Oregon is asking the University for three credits in manual training. Idaho has a committee of the State Teachers' Association at work on a standard course of study, which will probably be presented for discussion at the next meeting of the Association.

The officers elected for the year in the Manual Arts Section are: chairman, S. J. Work, director of manual training, State Normal School, Cheney, Washington; secretary, Miss Inez St. Johns, State Normal School, Lewiston, Idaho.

—C. A. Steelsmith,
Lewiston, Idaho.

At the April meeting of the Manual Training Section of the Middle Tennessee Education Association the name was changed to read "Art and Manual

Training Section." Officers for the year were elected, as follows: Chairman, A. C. Webb, Nashville; Secretary, Miss Carrie E. Smith, Columbia. The special features of the meeting were three addresses: "The Application of Art to Manual Training," by A. C. Webb, Nashville; "The Function of the School in the Problem of Home-Making," by Miss Elizabeth Randall, Nashville; and "The Culture Element in the Manual Arts," by President C. B. Gibson, Mechanics Institute, Rochester, N. Y.

The fourth annual meeting of the Connecticut Manual Arts Teachers' Association was held at the Green Street School, New Haven, on Saturday, April 27th. The Art Section conducted a "Portfolio Exhibit," and the Shopwork Section a "Suit-Case Exhibit." Here is an idea worthy of emulation in other organizations.

During the first week in April the thirty-first annual convention of the Alabama Educational Association was held at Birmingham. The sessions included a splendid program conducted by the Manual Arts and Industrial Education Section.

TABLE, HIGH SCHOOLS, CINCINNATI.

SHOP PROBLEMS.

GEO. A. SEATON, Editor.

TABORET.

The taboret shown in the photograph was contributed by W. E. Hackett, of the Boys' High School, Reading, Pennsylvania. The working drawing is complete enough to make further comment unnecessary.

LIBRARY TABLE.

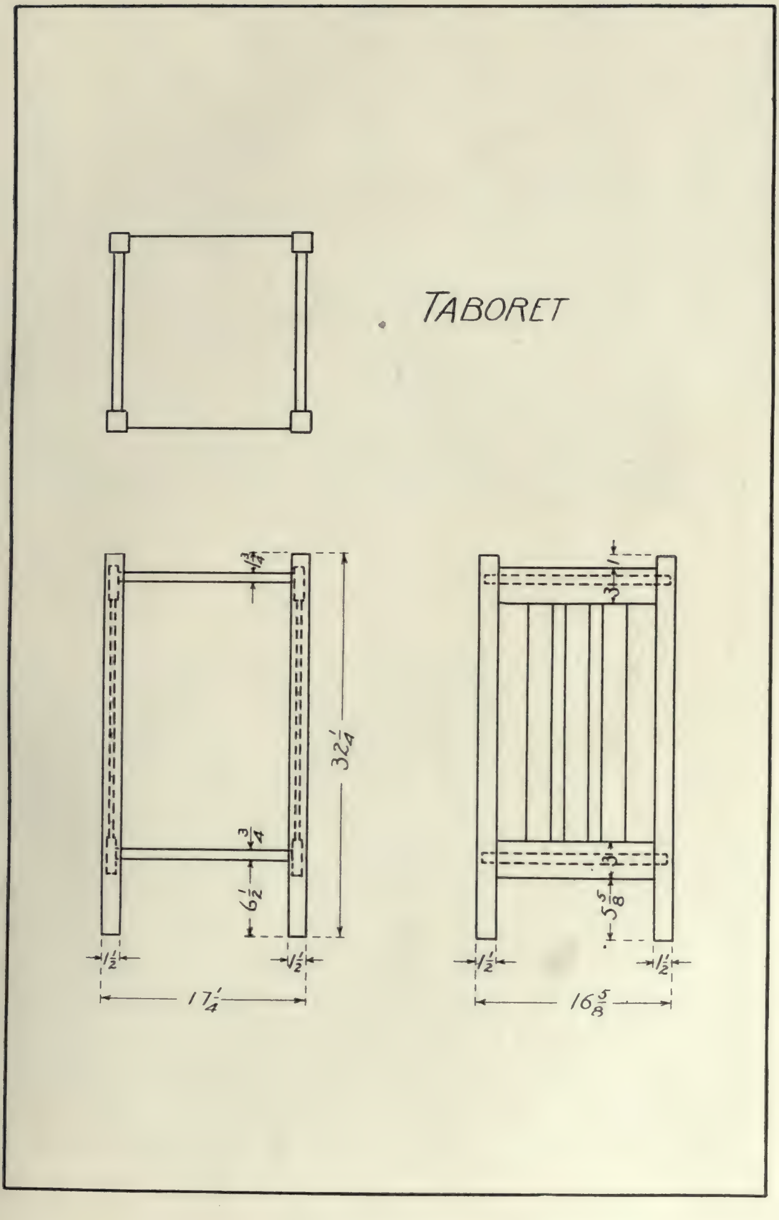
The design for the library table which is given in this issue is original with one of the students working under Phillip S. Hasty, in the Newman Manual Training School, New Orleans. As the table was intended to be held together by dowels, the brackets used become exceedingly useful besides giving a touch of individuality to the project.

MISSION CHAIR.

The working drawing of the mission chair, frequently designated Roman chair, is typical of a class of chairs structurally simple. The design is furnished by W. E. Hackett, of Reading, Pennsylvania.

COMBINATION TABLE AND DAVENPORT.

While articles of furniture intended to serve more than one purpose are generally of doubtful utility, the combination library table and davenport illustrated seems to have met a very definite need in the home where it now is. The project has been worked out with considerable ingenuity by a student of the San Jose High School, working under the direction of P. D. Croney. Possibly it may prove suggestive to others who are cramped for space. In putting it together it should be noted that the washers on the upper and lower arms should be of different thicknesses.


TABORET
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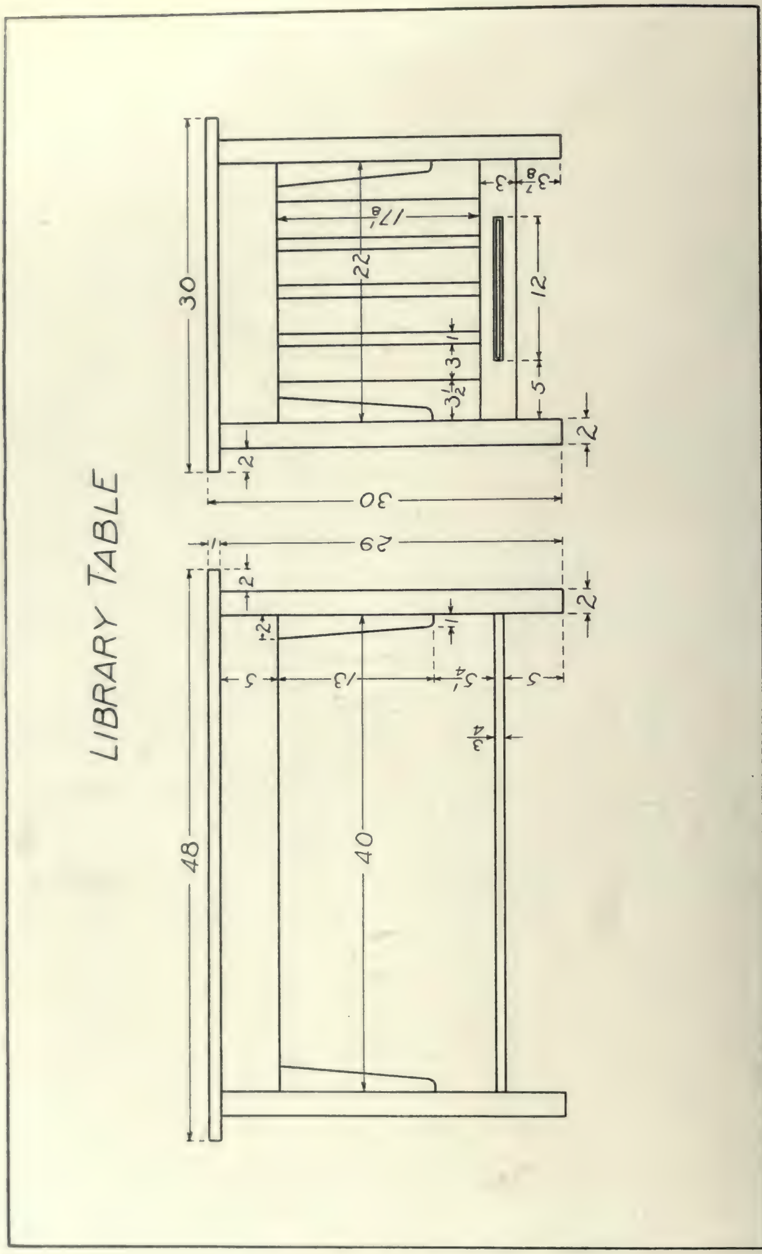
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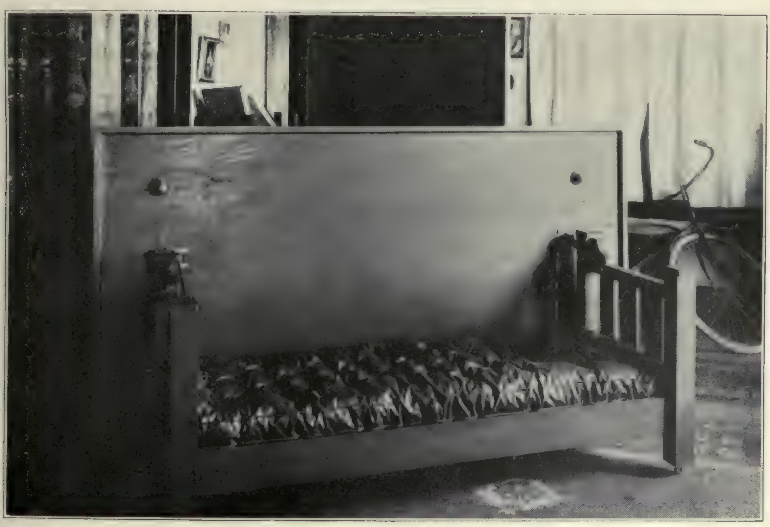
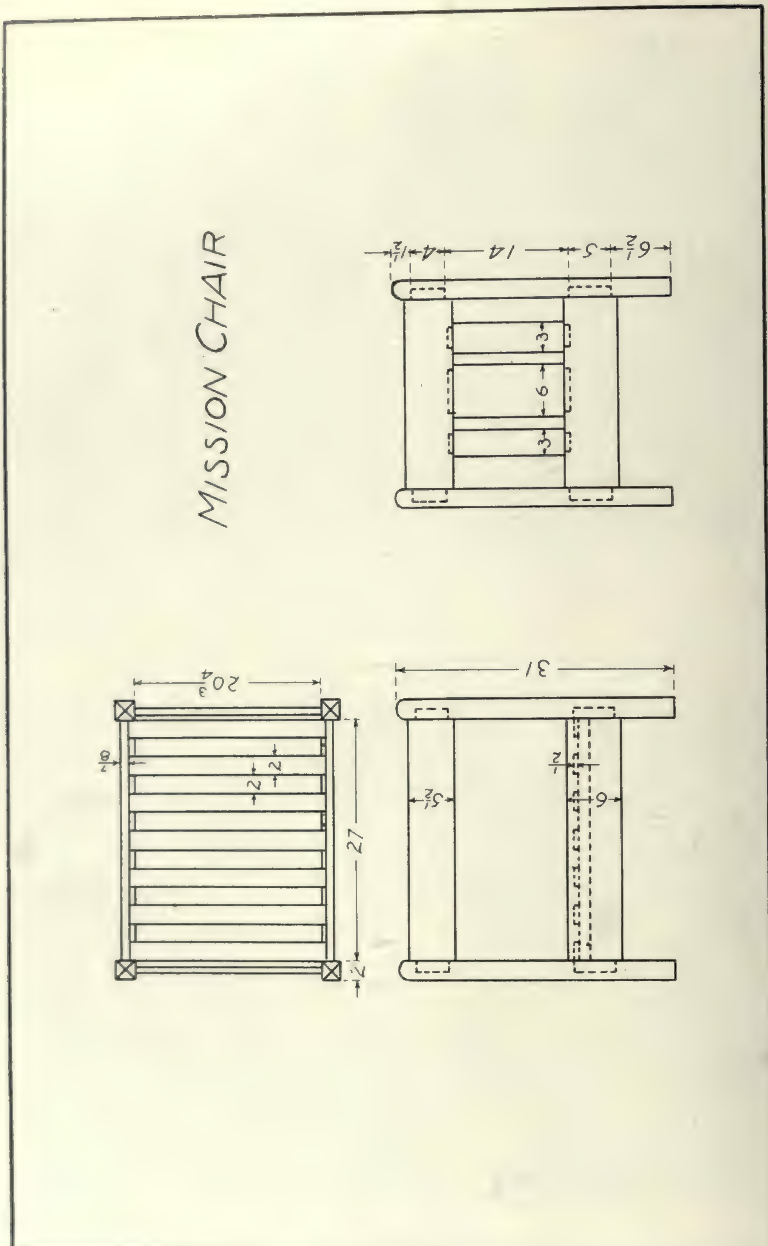
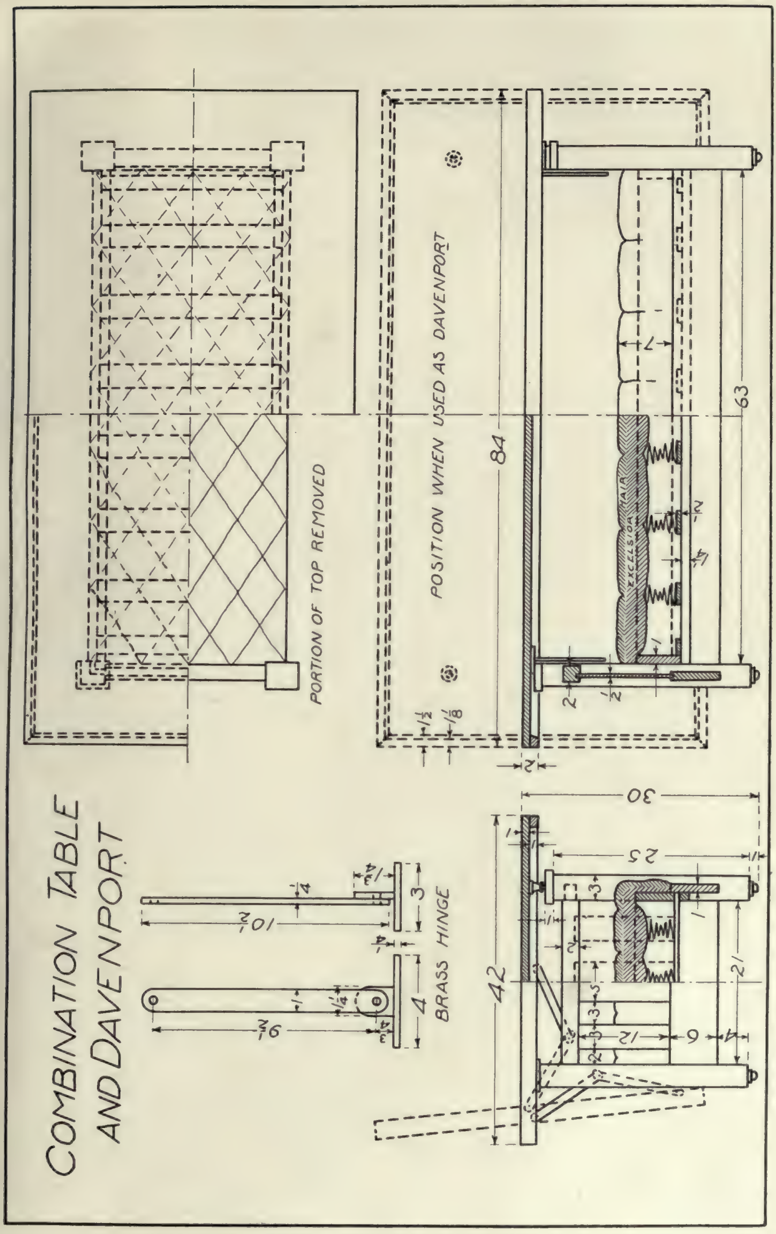


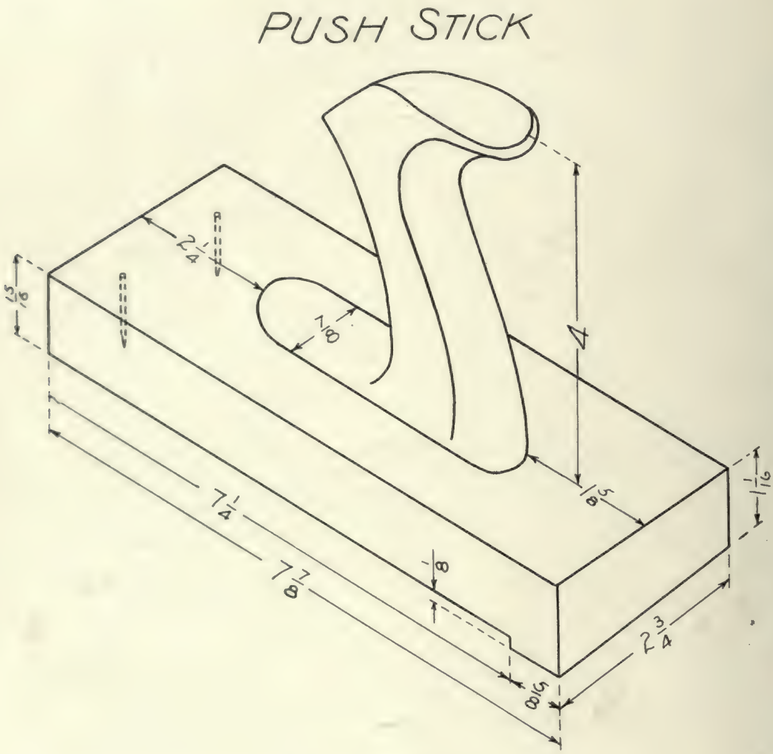
COMBINATION TABLE AND DAVENPORT.


MISSION CHAIR


COMBINATION TABLE AND DAVENPORT
PORTION OF TOP REMOVED
POSITION WHEN USED AS DAVENPORT
EXCELSIOR
HAIR
BRASS HINGE
84
63
42
30
25
21

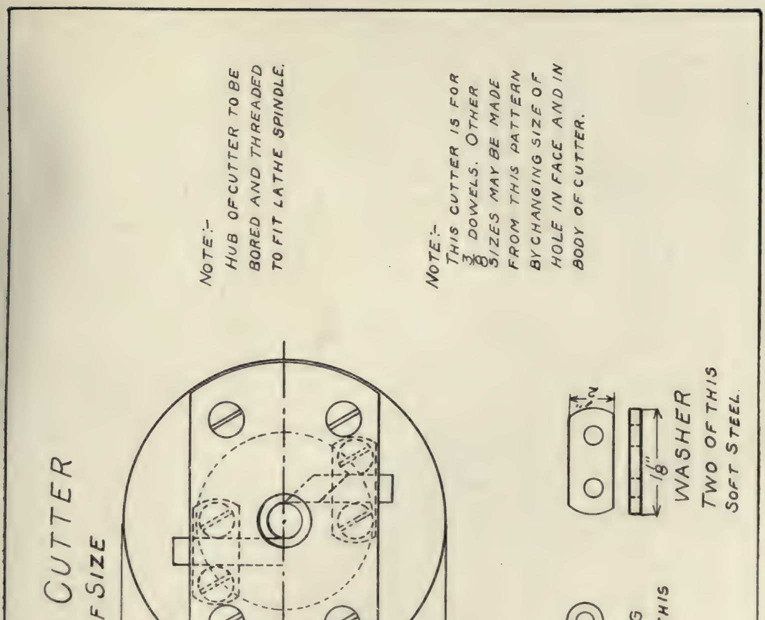
PUSH-STICK.

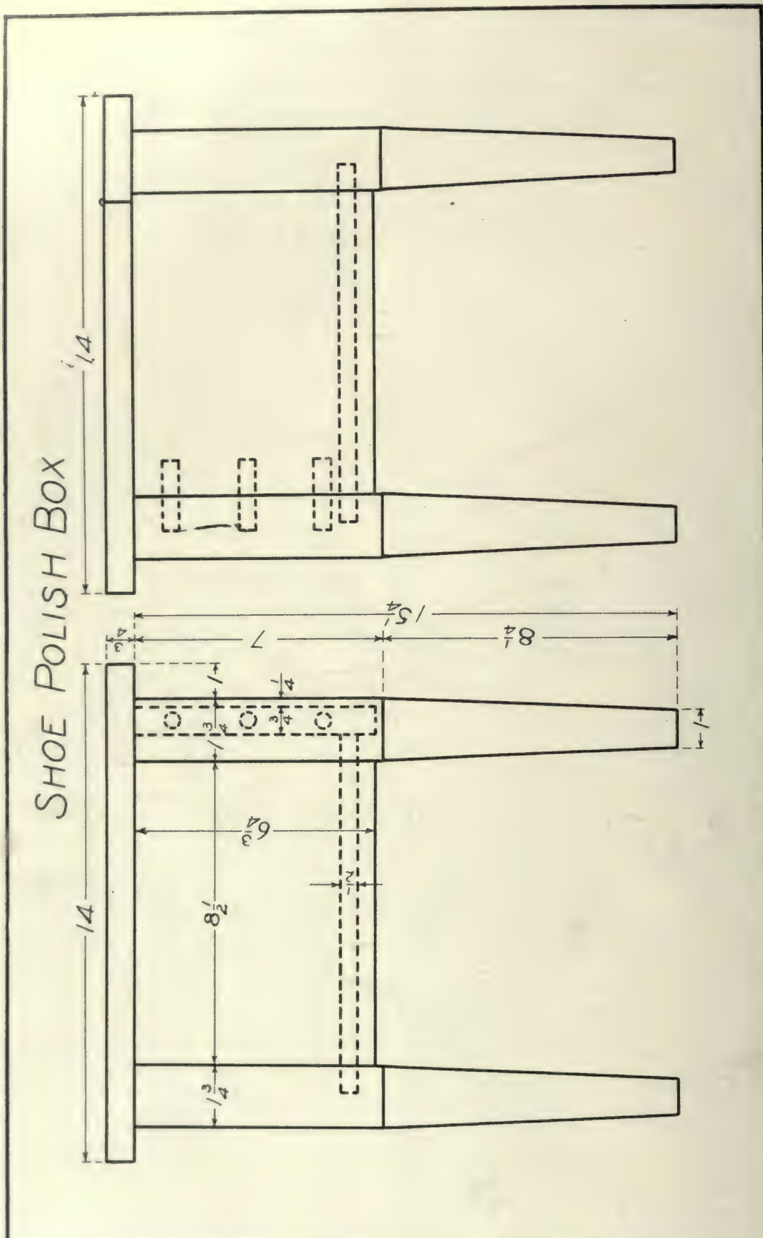
The push-stick is intended to be used in handling material over the jointer. By utilizing the handle from a discarded jack-plane, an interesting problem in mortising may be introduced. If desired, two fine brads, with sharpened points slightly projecting, may be inserted near the front end. The design is submitted by Frederick Ellis, instructor in pattern-making, College of Engineering, University of Illinois.



DOWEL-ROD CUTTER.

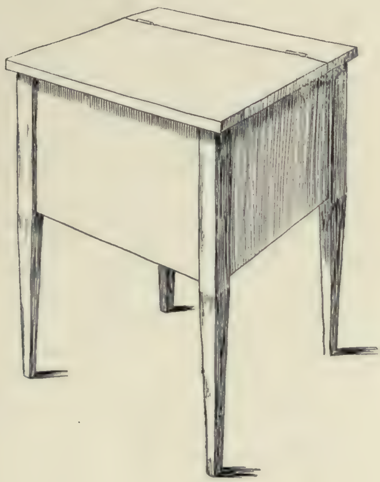
An excellent problem for the machine-shop is that of the dowel-rod cutter contributed by Eugene C. Graham, of Evansville, Indiana. The drawing given presents the dimensions needed for a cutter turning out 3/8" dowels only. It is suggested that other sizes could be made by changing the size of the hole in the face and the body of the cutter. In fact Mr. Graham says they have made this cutter in three different sizes, all working very well, turning out polished rods from rough square stock. The tool will work better if the cutting edge of the scoring cutter is set slightly in advance of the cut made by the shaving cutter. This may be done by setting a thin brass wedge under the inside end of the scoring cutter, thus raising it slightly from the face of the main body of the tool.


DOWEL ROD CUTTER
SCALE:- HALF SIZE
NOTE:-
HUB OF CUTTER TO BE BORED AND THREADED TO FIT LATHE SPINDLE.
NOTE:-
THIS CUTTER IS FOR 3/8 DOWELS. OTHER SIZES MAY BE MADE FROM THIS PATTERN BY CHANGING SIZE OF HOLE IN FACE AND IN BODY OF CUTTER.
3/4" #10-24 Machine Screw.
1/4" #10-24 Machine Screw.
SCORING CUTTER.
ONE OF THIS
H.S. STEEL.
SHAVING CUTTER.
ONE OF THIS
H.S. STEEL
BUSHING
FOUR OF THIS
BRASS.
WASHER
TWO OF THIS
SOFT STEEL


SHOE POLISH BOX

SHOE POLISH BOX.

A handy piece of furniture which is very simple in its construction is the shoe polish box submitted to the department by J. J. Berilla, of Vineland, N. J. The sides are doweled to the legs with three $\frac{3}{8}''$ dowels, and the top may be either nailed or screwed down. In assembling the box, the two ends should be glued first and after this has hardened, the balance of the glueing may be completed. The bottom of $\frac{3}{8}''$ wood may be fastened in place upon $\frac{1}{2}''$ strips as shown by the dotted lines of the drawing. The top of the box may be covered with carpet to prevent its being scratched.



CURRENT ITEMS

THE CHILDREN'S BUREAU.

A Children's Bureau was established as part of the Department of Commerce and Labor by act of Congress in April, 1912. This enactment is the result of five or more years of vigorous campaigning and the unremitting devotion of the child welfare organizations of the country, led by the National Child Labor Committee. All educators will rejoice with them in the establishment of the Bureau.

The purpose and duties of this Bureau are these: to investigate and report to the department upon all matters pertaining to the welfare of children and child life among all classes of our people, and especially investigate the questions of infant mortality, the birth rate, juvenile courts, desertion, dangerous occupations, accidents and diseases of children, employment and legislation affecting children in the several states and territories.

The law provides for a chief of the Bureau, appointed by the President with the consent and approval of the Senate, whose annual compensation is to be five thousand dollars.

Assistants, clerks, trained investigators are also provided for. Miss Julia A. Lathrop has been appointed chief of the Bureau. Her appointment has met with wide approval, her work along civic and public welfare lines being well known. Miss Lathrop first became associated with Miss Jane Addams in her work at Hull House. She became a member of the Illinois State Board of Charities and was one of the group who were active in bringing about the juvenile court in Illinois, the first in this country. Miss Lathrop is president of the Illinois Society for Mental Hygiene and is vice president of the Chicago School of Civics and Philanthropy. She is an instructor in this school and has shown marked ability in guiding social workers. Thus Miss Lathrop brings to her work as chief of the Children's Bureau wide experience and special talents which well fit her for a position of such importance and influence.

VACATION SCHOOLS.

Vacation schools, with manual training and domestic science as leading subjects, proved even more popular this year than last. New York vacation schools had a registration of 26,267, Minneapolis over 4,000, St. Louis 2,350. At Portland, Oregon, vacation work was provided in thirteen schools. In New York and Minneapolis registration was augmented by pupils taking academic subjects to make up work lost during the school year. Numerous smaller cities report growing interest in vacation schools. Certain questions arise in noting this interest in such schools featuring the manual arts. Does it indicate a demand for a longer school year? Does it indicate a demand for more time devoted to manual activities in the regular school program? Does it point to a desire on the part of parents for more practical work for their children, or merely to a gladness to have their children kept off the streets and out of their way during the trying summer months? Possibly an investigation of these points would throw some light on the elementary school problem.

EASTERN STATES.

James Frederick Hopkins this fall enters on a new and important field of work as supervisor of art education for the state of Massachusetts. This position includes the directorship of the Massachusetts Normal Art School. Mr. Hopkins is eminently fitted for a position of such responsibility and wide influence, having had a large and varied experience in the work of art instruction. Mr. Hopkins has for the past few years been director of the Maryland Institute Schools of Art and Design. Probably Mr. Hopkins is most widely known in connection with his services during the international art congresses. He was chairman of the American committee for the recent Dresden Congress, and was indefatigable in his efforts to make the congress of interest to American art teachers. Mr. Hopkins takes into his new position the good wishes of a host of friends and fellow-workers.

The women manual training teachers of Boston have an organization, called the Manual Arts Club, of which Miss Florence O. Bean is president. The sewing teachers also have a club, known as the Boston Sewing Teachers' Association. Miss Esther C. Povah is president. These organizations have as aims professional and personal improvement, and social recreation.

The manufacturers of Greenfield, Massachusetts, have shown their interest in the schools by several gifts of machinery. One company gave the manual training department a power drill, and a full set of taps, dies, and plumbers' tools. Another gave a power lathe. A third company donated a hand drill, a breast drill, a bench drill, a hack saw, a grinding head, and various small tools.

Somerville, Massachusetts, has extended its manual training department this year to include another grade center and a machine shop at the Tufts street school. Most of the work of constructing the machine shop will be done by the department. The school committee also voted to employ women teachers of manual training hereafter. Miss E. Christabel Ruggles was appointed as the first woman teacher of the subject.

At Leominster, Massachusetts, in one grammar school, is maintained a practical course of study for those seventh, eighth, and ninth grade pupils who wish to take it. Half of the school day is devoted to manual activities; household work, dressmaking, and millinery for the girls, and the usual forms of manual training for the boys. Boys of fourteen and over are allowed to get their industrial training by working half of the day in the local factories if they wish to

PENNSYLVANIA.

The Pittsburg, Pennsylvania, schools begin the year with a number of interesting new features. The supervision of industrial education is in the hands of Frank H. Ball, formerly of Cincinnati. Mr. Ball's effective work in Cincinnati is well-known and therefore his work in Pittsburg will be observed closely.

In the Fifth Avenue High School, a four years' course of industrial work

has been established. This course offers two lines of study, one leading to entrance into higher technical institutions, and the other, with emphasis on the shop side, leading into the industries. In the five other high schools in the city one and two year courses in industrial work have been established. Pittsburg has heretofore had no work of the kind in the high school, but has given some pattern-making, cabinet making, and wood-turning in the grades. The planning of a high school course which will not seem a repetition to these grade students is a difficult task. The work in the grades will be simplified in some respects. A dozen new manual training centers have been established thruout the city.

The newest feature of al! is the establishment of two elementary industrial schools. These offer a two years' course for boys above fourteen years of age without regard to academic qualifications. The course the first year will allow a boy an opportunity to work in a number of the departments until he "finds himself," and then he will specialize. The courses offered are printing; metal-work, including copper, brass, sheet-iron, and tin; elementary mechanics and practical electricity; mechanical drawing, closely connected with all branches; cabinet making; wood-turning and patternmaking; house framing, for a sufficient length of time and practical enough to enable the boys to make an application of the electrical work; and a simple course in the fundamentals of plumbing, including a study of drainage, vents, water pressure, etc. An enrollment of about four hundred is expected at the North Elementary Industrial School, and half that number at the Irwin Avenue school in Allegheny.
do so.

The school board of Homestead, Pittsburg, authorized Superintendent Deffenbaugh to proceed with his proposed plans of arranging a special program for pupils found below the seventh grade who are fourteen years of age or over. These pupils will be given a school day in which half of the time will be devoted to manual activities.

A goodly number of Pittsburg grade teachers availed themselves of the opportunity which was offered this summer at the Margaret Morrison School, of the Carnegie Technical Schools. A course in manual arts for elementary grades was the subject chosen, and these teachers will this year be much better prepared to interpret the course of study in their schools and the directions of supervisors than heretofore.

Scranton, Pennsylvania, is the fortunate recipient of a bequest for a manual training school left by the will of Orland S. Johnson, who died in May of this year. Altho the estate has not as yet been fully settled it is estimated that $700,000 will be available for the school. The Scranton Trust Company, the executor of the estate, will be assisted in this matter by an advisory board named by Mr. Johnson. The advisory board and the executor have complete control of the founding and maintenance of the school, being governed only by the testator's wish that the young people of Scranton and Lackawanna County be taught in the school such useful arts and trades as may enable them to make an honorable living and become useful members of society.

The advisory board have not decided, as yet, whether they shall proceed with the founding of the school or shall allow the fund to accumulate before building at a future time.

The manual training department at Reading, Pennsylvania, is steadily growing. This year the work has been extended to the sixth grade, a technical course has been arranged for the high school, and a machine shop has been opened.

Bethlehem, Pennsylvania, has arranged for a manual training department this year. A large basement room has been fitted up for the course. It has been whitewashed, newly ceiled, and provided with ample ventilating and lighting facilities. Twenty-one students' benches and one teacher's bench with full tool equipment have been installed. The benches are fitted with rapid-acting vises. Recitation benches have been supplied for class instruction, and an adjoining room has been arranged as the teacher's office. The equipment cost about $600.

Instruction in manual training will be given to the seventh and eighth grades and to the students of two years of the high school course. Only one and one-half hours per week have been planned for each class, but this time will doubtless be extended after the department has been in operation long enough to demonstrate the need for longer hours. E. J. Overfield is supervisor.

MAINE.

A three-year course in household arts has been organized at the Farmington Normal School, in Maine, this fall. The course is designed to train teachers and supervisors of domestic science, domestic art, domestic economy, and kindred subjects. The establishment of this course is in accord with the legislative provision enacted last year, which directed the organization of this course and also a three-year course in manual training. The manual training course is conducted at the Gorham Normal School.

At Farmington the household arts course is open to all students, but intensive study is provided for those who show special aptitude in the work and who desire to prepare for supervisorships. A cottage home near the normal school buildings has been prepared for the use of the department in teaching the various practical phases of homemaking.

Miss Marion C. Ricker is at the head of the household arts department. Miss Ricker received her preparation at the Boston School of Domestic Science and at Teachers' College, Columbia University.

The Nasson Institute, at Springvale, Maine, is a newly established school, for girls and women, which specializes in domestic economy, and secretarial work.

Manual training has been introduced this year in Dover, Delaware. Two large basement schoolrooms have been remodeled, at a cost of $1,500, for the use of this department. An equipment of 24 benches and the necessary tools has been furnished at a cost of $600. Woodwork will be given to grades six, seven, eight, nine, and ten; cardboard construction will be taught in the lower grades; and lessons will be given in drawing and design. Fred C. Haegele, who has been an assistant in the Drexel Institute forge shops, in Philadelphia, is the director of the new course in Dover.

CENTRAL STATES.

The Wisconsin State Teachers' Association is pushing the good work of standardization in special subjects. A uniform course of study in domestic science and art was arranged by a special committee and is being circulated among superintendents and principals of the state for criticism. The proposed course includes food-study, adulteration, dietaries, hygiene, sanitation, and household management. The course is planned to begin with the fifth grade.

Kaukauna, Wisconsin, introduced manual training and domestic science into the public schools this fall. Mondori introduced domestic science and agriculture. Baraboo has a course in domestic science newly established. Menominee Falls also has domestic science.

Women's clubs have been notably active in securing and aiding public school departments of manual training and domestic science. The Women's Club of Wauwatosa, Wisconsin, is responsible for the installation of these departments in that city and have contributed largely to the expense of equipment.

IOWA.

Superintendent W. O. Riddell, of Des Moines, Iowa, is determined that the sewing course in the high school shall be above the reproach of dilettanteism. To this end the girls taking the course this year will devote two hours a day to the subject, which will be given the same credit as other subjects of the curriculum.

Manual training work will be extended down thru the sixth and fifth grades of the schools in Des Moines.

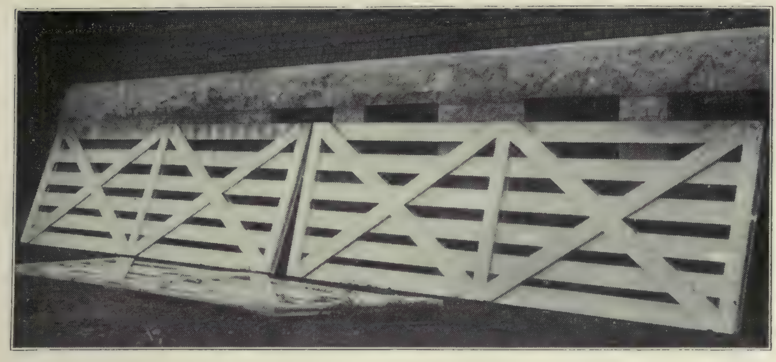
The Davenport, Iowa, high school has had manual training for a number of years, but only within the last few years has a special four years' course been maintained in the manual arts. This year the first class was graduated from this special course.

A work-bench for rural schools has been devised at Manhattan, Kansas, and manufactured at Iola, which can be bought for $2.50. When equipped with a steel vise the cost will be $3 or $4, but even this, it would seem, places such a bench within the reach of every rural school.

The Minneapolis board of education has appointed a committee to secure information as to the value of the high school manual training to the boys who have taken it and as to the use made of the course by the boys after they enter the working world. The present occupations of the graduates of the manual training course for the past three years will be investigated.

At Spring Valley, Minnesota, is located an "associated school system," one of the Putnam act schools. Especial attention is here given to adapting the

work in manual training to the interests and needs of rural school pupils. The boys of the department constructed three sixteen-foot gates for the school farm



GATES MADE BY MANUAL TRAINING STUDENTS IN HIGH SCHOOL, SPRING VALLEY, MINN.

and two two-horse markers the latter part of last year. The iron work for the markers was also made by the boys. One of the gates is shown in the illustration. The other illustration shows an addition built on a rural school for use as a manual training room. This addition was built by the boys of the department.

Several of the boys hired out to carpenters of Spring Valley and adjoining towns for the summer months. Nearly all of the boys were occupied in some line of employment during the summer.

S. A. Blackburn, director of manual training, has worked out a tentative course of models for the short-course class for this year, which will be of interest to teachers who have similar classes. The models proposed are a nail-box, saw-buck, saw-horse, hammer-handle, double and singletree, and portable hog houses and poultry houses.

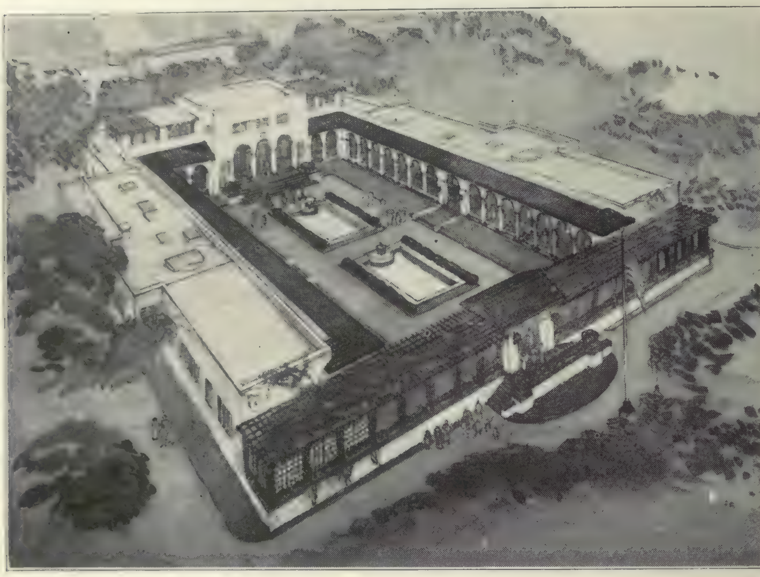
WESTERN STATES.

CALIFORNIA.

The organization of a state council of supervisors of the manual arts is being discussed in California. The time seems favorable for such an organization in which would be included supervisors of manual training, drawing, domestic science and home economics. Manual arts work in the public schools of the state has been developing rapidly in the last few years and a degree of standardization and mutual helpfulness should now be possible. C. A. Kineau, supervisor of manual training in Los Angeles, has sent a letter thruout the state, urging the matter of organization. This will serve as a starting point and we may expect to hear soon of an active association of manual arts teachers in California.

SANTA BARBARA NORMAL SCHOOL.

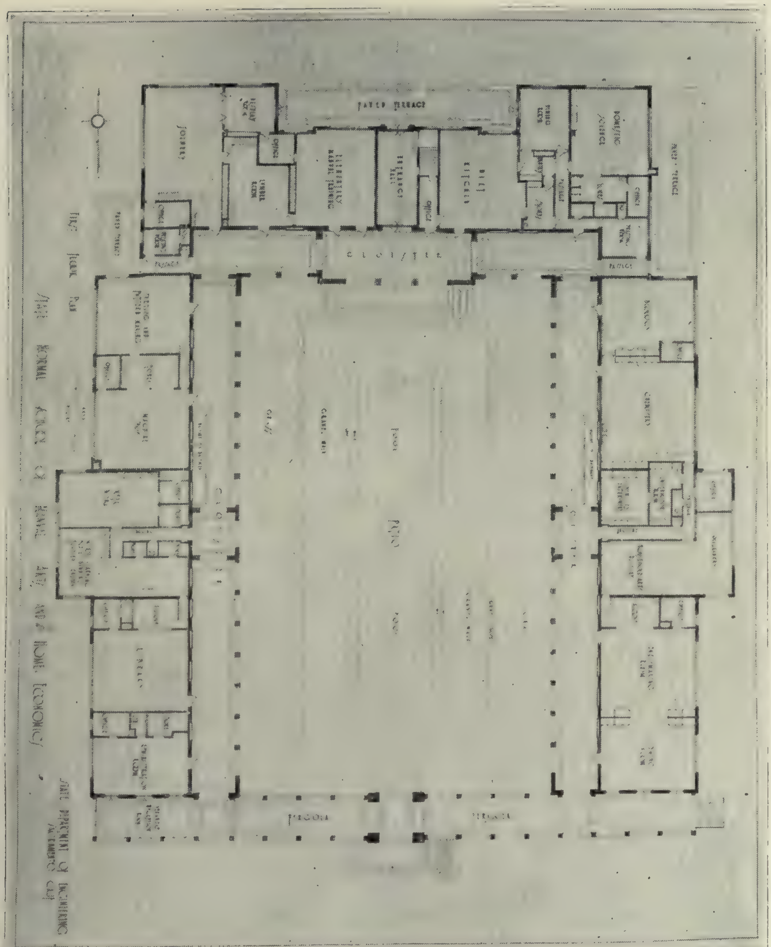
The new buildings for the Santa Barbara Normal School of Manual Arts and Home Economics shown in our illustration are to be of the Spanish-American type of architecture and will be of unusual interest on account of the development



AVIATOR'S VIEW OF NEW BUILDINGS FOR STATE NORMAL SCHOOL OF MANUAL ARTS AND HOME ECONOMICS, SANTA BARBARA, CALIFORNIA.

of this style of architecture to fit school purposes, and because of the manner in which the buildings will harmonize with their surroundings and the old mission existing in Santa Barbara. Contracts for the buildings were let September 10th.

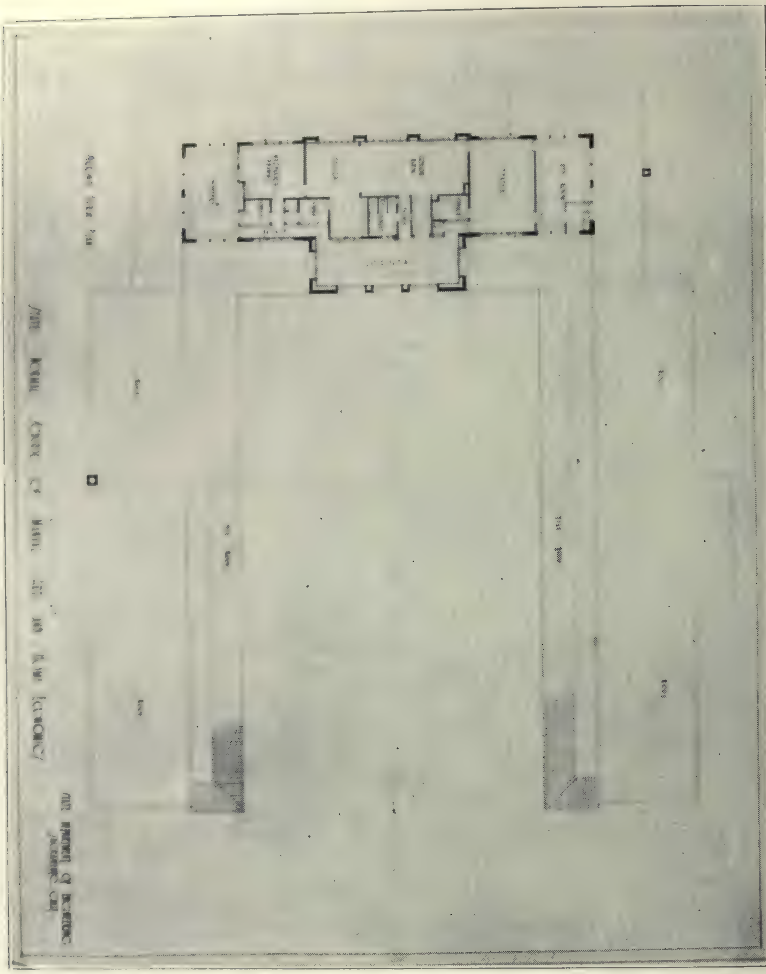
The ground floor plans make provision for the following: Administration offices, library, metalwork shop, machine shop with connecting rooms for turning and pattern making, joinery, with display room and lumber room adjoining; elementary manual training department; entrance hall, diet kitchen, connected with dining room and the other features of the domestic science department; biology laboratory, also for chemistry experiments, and the household art department, with dressmaking and sewing rooms connecting. Built around a court, opening to the south—and to the sea—one room wide and with deep cloisters, each of the laboratories has a convenient location and all have the most desirable exposure as to light, etc. The east and west wing will each be 250 feet in length and the north wing, connecting the other two, will be 225 feet long. The various laboratory rooms are practically 30 feet wide, and vary from 23 to 36 feet in length. There is no provision for study rooms within the building, the courts, cloisters and terraces being planned for the purpose.



GROUND FLOOR PLAN OF STATE NORMAL SCHOOL OF MANUAL ARTS AND HOME ECONOMICS, SANTA BARBARA, CALIFORNIA.

While the buildings will be of fireproof construction, wood floors will be used in the laboratories, and more or less interior finish will be of wood. The administration rooms will be finished in birch, the library in oak, the crafts rooms and all shops in Oregon pine, the hallway in the north front in eucalyptus, and the millinery room in redwood.

Every room is provided with a special office for the instructor. Storerooms are abundant, the shops having mezzanine floors giving upper and lower store rooms. Inclines are used thruout in place of stairways.



SECOND FLOOR PLAN OF NORTH WING.

The court, surrounded by the three wings, will be 100x160 feet; cloisters fifteen feet deep will range on two sides, and across the center of the north side there will be a two story building, the other wings being but one story in height. This second floor has a large loggia overlooking the court, and will be used for a lecture room for art students.

While the general design of the building is Spanish, there will be no attempt to adhere to the small windows and low doorways characteristic of many palaces of the olden time, and every attention has been given to having as much light as required. The problem of ventilation has been met by working transoms

and a proper system of circulation. For roofing, the old-style Spanish tile, of a mossy green color, will be used. The south side of the court will be marked by an open pergola; and the designers have not decided as to the formal treatment of the court. As it will be used as a gathering place for students, ornate floral decoration will probably not be attempted. In all the work rooms the electric lighting will be by the indirect system.

In addition to the buildings around the court, a cafeteria will be constructed east of the main building. The cafeteria will be pavilion-like in structure and will contain a diningroom, reception room, laundry, kitchens and storerooms. The building will be placed on a hill slope, thus giving room for laundry and kitchens on the first floor. A roof garden will be an attractive feature of this building. The cafeteria will be managed, after it is in operation, by the home economics department.

The state law provides that equipment such as desks, chairs, and all cabinet work shall be made at the San Quentin prison. The brushes and brooms will be made at the state school for the adult blind. Wall cases will be provided for the cloisters to contain student and loan exhibitions.

Not the least of the attractions of this school will be its outlook. It commands a view of the Pacific, of the mountains, and of the surrounding valleys. Miss Ednah Rich, the president of the school, and both faculty and students are to be congratulated on their opportunity of pursuing their chosen work under such delightful conditions.

The manual arts department of the California State Normal School at Los Angeles is growing rapidly under the supervision of C. W. Kent. New buildings and an additional years' work are contemplated for the near future. The teaching force of this department has been augmented by the appointment of Carroll W. Angier, a graduate of Bradley Institute, who has been supervising manual training at Fort Worth, Texas.

Two new departments have been added to the manual arts in the grammar grades of Los Angeles. Textiles are being studied under the direction of Charles Miller, and ceramics under the supervision of C. A. Kineau, who is director of manual arts for the city.

COLORADO.

The Colorado State Teachers' College at Greeley has fully organized departments of industrial arts, domestic science and art, art, and agriculture. The college is a four year professional school with four divisions, a junior college corresponding to the usual two-year normal school; the senior college which leads to the degree of Bachelor of Arts in Education; an elementary practice school; and a practice high school. The courses in special subjects are arranged with regard to these divisions.

The department of industrial arts is located in the Guggenheim Hall of Industrial Arts, a building with a floor space of 17,000 square feet. Parts of two other buildings are also used by this department. For junior college work courses are offered in wood-work, art metal, mechanical drawing, project design, wood turning, and wood carving. The following courses are open to both junior and senior college students, advanced woodwork, advanced woodcarving, a

CORNER IN DOMESTIC ART ROOM, SANTA BARBARA NORMAL SCHOOL OF MANUAL ARTS AND HOME ECONOMICS. RUGS MADE BY NORMAL STUDENTS. THE SPINNING WHEEL IS 200 YEARS OLD. THE LOOM IN MIDDLE IMPORTED FROM SWEDEN. LOOM AT LEFT DESIGNED BY MISS RICH AND MADE BY THE DEPARTMENT.

study of industrial work in elementary schools, advanced art metal, advanced mechanical drawing, architectural drawing, advanced architectural drawing, elementary machine design. For senior college students these additional courses are offered; advanced machine design, study of industrial arts in secondary and trade schools, furniture design, pattern making.

A complete course in printing is also given, occupying five hours a week for four terms. Fundamental principles of the printing art are studied, and hand composition, make-ready, press operating, designing, two and three-color work, proofreading, operating the monotype keyboard and caster, ad composition, with other allied subjects. An equally extensive course of four terms is given in bookbinding.

Students may take as a major subject the teaching of manual training, in elementary schools, in the junior college. The teaching of industrial arts in secondary schools is a senior major subject. Combinations with other departments are allowed. Three terms of teaching are required of junior college students for graduation and an additional three terms is required for senior college gradu-tion.

The work in the department of domestic science and art covers the usual subjects, and includes house sanitation, the evolution of the house, and house furnishing and decoration.

The development of the manual arts in the normal schools from a single subject to a well-articulated professional course such as this of the Greeley College of Teachers is very encouraging and promises well for the future professional standards for teachers of manual arts.

The Longfellow Technical High School of Denver last year had 160 pupils who completed the first year of work. About 185 will enter the school this fall. This school is preparatory to the three year's course of the manual training high school.

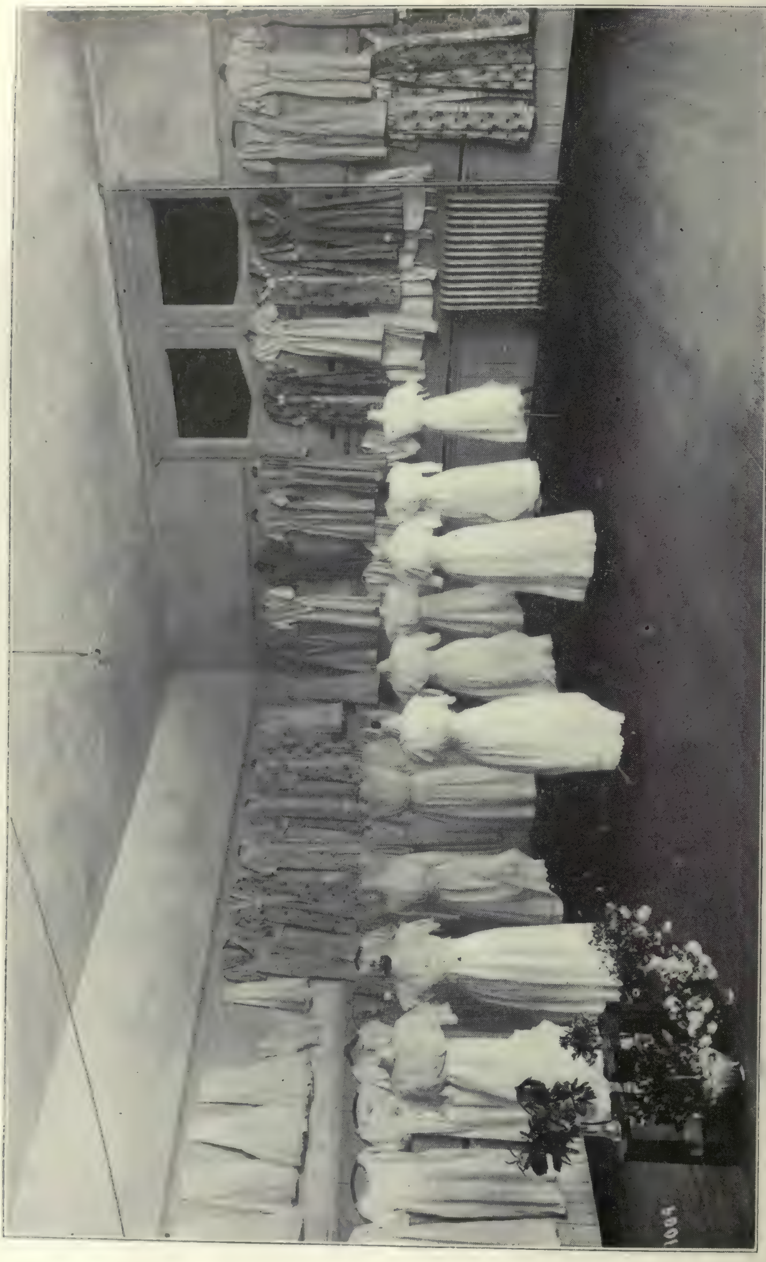
The girls of the Denver manual training high school this last year learned the values and prices of various materials in actual shopping tours conducted by Mrs. W. S. Borst, head of the domestic economy department.

MANUAL ARTS EXHIBIT AT MEDFORD, OREGON.

A number of excellent pieces of work were shown in the June exhibits of the departments of manual training and household arts at Medford, Oregon; W. S. Collins, superintendent. The exhibits were carefully judged and prizes awarded in various classes of work for the grammar grades and high school. The accompanying illustrations show portions of the exhibits, which included the graduating dresses made by the girls of the senior class, pieces of furniture made for the school, etc. The shopwork is under the supervision of C. W. Frost, and Misses Mabel E. Mears, Bertha Welch, and Margaret Davidson have charge of the work in household arts.

RURAL SCHOOL MANUAL TRAINING.

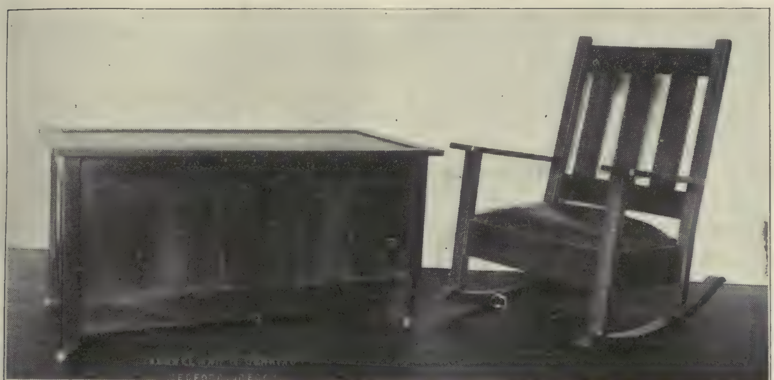
The Oak Lake rural school, near Seattle, Washington, established a course in manual training last year. Benches and tools were purchased to the value



PART OF SEWING EXHIBIT, MEDFORD, OREGON, HIGH SCHOOL, JUNE, 1912.

of $250. The equipment was sufficient for the use of sixteen boys at one time. The work was supervised by Ben W. Johnson, director of manual training in Seattle. Mr. Johnson sent a teacher to the Oak Lake school for half a day each week. The boys showed intense interest in the work, and made a number of good-sized pieces of furniture. They were allowed to put in all of their spare time at the benches.

The manual training work will be continued this year with added equipment.



ROCKING CHAIR AND PANELED CHEST AWARDED 1ST AND 2ND PRIZES, RESPECTIVELY, FOR HIGH SCHOOL SHOPWORK, MEDFORD, OREGON.

SOUTHERN STATES.

Excavation was begun in August for the manual training building at George Peabody College for Teachers at Nashville, Tennessee. The domestic economy building will be the next to be constructed. Four buildings in all will be ready for the opening in September, 1913.

George Peabody College is the outgrowth of Peabody Normal College, established thirty-seven years ago. The reorganized school is planned to develop into a professional school of the rank of Teachers College, Columbia University.

ALABAMA.

Alabama shows a growing interest in the manual arts. The June number of the *Educational Exchange,* published at Birmingham, was devoted almost entirely to the manual arts and industrial education and gave much interesting information regarding the development of those subjects in the state.

The normal schools of the state have departments of manual training and domestic science, the Florence normal being the first to introduce the work. The department at the Florence normal school has been recently enlarged and new equipment has been added. The Troy Normal School will have new departments of domestic science and domestic art this year. A department of manual training has been in operation for some time under the supervision of Virgil P.

McKinley. Special attention is paid to the problems of the rural schools. The Daphne State Normal School has manual training under the direction of Miss Ethel F. Cortright. The subjects of instruction are mechanical drawing, woodwork, basketry, clay modeling, tooled leather and metalwork. The work is required of all students taking the professional course. The manual training and domestic economy work at the Jacksonville Normal School is so directed as to be of special value to rural teachers. In each department a course suitable for use in rural schools has been outlined and equipments planned. Miss Marion McMelan is in charge of domestic science and James L. Sibley directs manual training. The Alabama Normal College at Livingston last year established a department of household arts which includes plain sewing, dressmaking and dress designing, and the furnishing and care of the home.

Domestic science is a very important feature of the work at the Alabama Girls' Technical Institute at Montevallo. Miss Louesa Keys is in charge and has one assistant. W. N. Henderson teaches domestic and household chemistry. Two hundred girls at Montevallo are studying domestic science, half of them specializing in that subject. Miss Martha Patterson is in charge of domestic art and has four assistants. Art and manual training are supervised by Mrs. H. B. Howie, assisted by Miss Mary E. MacMillan.

The district agricultural schools also are introducing the subject of manual training rapidly. The Fifth and Third Districts open departments of both manual training and domestic science this fall and the Albert District's new building contains shops for these subjects which will soon be equipped.

Birmingham, Mobile, Boyles, Bessemer, Gadsen, Hartford, LaFayette, Florence, Selma, Dothan, Eufaula, all have manual training in the schools, also Bibb and Lawrence county high schools. Bessemer adds wood-turning to the high school course this fall.

The new West Tennessee State Normal School at Memphis has departments of manual arts and domestic economy. C. H. Wilson is head of the manual arts department, and Miss Helen Buquo has charge of the department of domestic economy.

Knoxville, Tennessee, is finding manual training valuable as evidenced by enlargement of the high school department and by the extension of the subject to three grade centers. Domestic science and art are being likewise extended. N. B. White has been appointed manual training instructor in the grades.

Manual training was introduced into the schools of Chattanooga last year. The work, begun only in the high school, is being extended this year thru the sixth, seventh and eighth grades. Benchwork and mechanical drawing are the subjects of instruction in these grades.

At Crosset, a lumber-milling town in Arkansas, is found an ideal spirit of cooperation between employers and employed which has resulted in a progressive school system. The employees raised a fund of $14,000 with which a new grammar school, and a manual training building were erected and the old building was repaired. In the manual training building are a room for benchwork and wood-turning, a heating plant, and a lighting plant. Domestic science

is provided for in a cooking laboratory, a sewing room, a diningroom, and a laundry room. These are in the high school building.

The mill owners cooperate by paying the salaries of the manual training and domestic science teachers and by furnishing supplies for these departments.

The high school at Manatee, Florida, needed an industrial building. As no funds for the purpose were available, the high and grammar school pupils combined effort and provided the labor needed. The grammar grade pupils made the concrete blocks used in a building, one story high, 25 x 50 feet. The high school boys put up the walls and the roof, and the high school girls nailed on the laths for the plastering. It would appear from this that the need of industrial education is fully appreciated by the Manatee young people.

FURNITURE AND RUGS MADE BY WOMEN STUDENTS AT THE SANTA BARBARA NORMAL SCHOOL OF MANUAL ARTS AND HOME ECONOMICS.

REVIEWS.

Fine and Industrial Arts in Elementary Education. By Walter Sargent. Ginn and Company. 8 x 5¼ in.; pp. 132. Price $0.75.

The teacher of drawing, as well as other teachers, finds each year among the varied titles on educational subjects books which inform, or stimulate, or which give practical aid, but seldom does one find a book like Mr. Sargent's which becomes a true *book-friend* at once. Modest in appearance, making no claim to exhaust its subject, heralding no new doctrine, it yet combines within its pages the real essentials of the theory and practical pedagogy of the arts of which it treats. Its value can scarcely be analyzed or its helpfulness estimated. Probably no class of teachers suffers more from discouragement and uncertainty than do teachers of drawing and construction. This is caused from seeing constant evidence in graphic form of the results of their work. For those who have thus become heart-sick from too closely viewing the crude efforts of children, Mr. Sargent's book has a most welcome message of good cheer. He points out the psychology of the matter and the folly of judging the work of children by adult standards. He understands children and is able to see the subject from their point of view. For instance, in speaking of the tendency of first graders to show all the details of interior arrangement in their pictures of houses, he says, "The attitude of mind which leads the children to do this is not a fault to be overcome by instruction, but a stage to be lived thru and one which contributes directly to further development."

The first chapter discusses the educational and practical values of the fine and industrial arts. The second describes the progress of the subjects thru the grades, giving the reader a grasp of the scheme as a whole. In the succeeding chapters the work of each grade is taken up more in detail. Each chapter concludes with a statement of the standard of accomplishment which can reasonably be expected from that grade. Thruout, the author's purpose has been to present for consideration these questions; what are the distinctive functions of the subjects taught under the head of manual arts in elementary education; how shall instruction be organized so that progressive attainment shall be evident from year to year; what are reasonable standards of attainment at any given stage?

Each of the chapters on the work of the grades is illustrated with well selected examples of children's work.

As a serious effort at standardization, as a practical teacher's guide, and as a source of inspiration, Mr. Sargent's book will take rank at once among the few indispensable. —V. E. Withey.

The Social Motive in School Work. Yearbook of the Francis W. Parker School, 330 Webster Avenue, Chicago, Vol. 1, June, 1912. Published annually by the Faculty. 6 x 9 in.; 140 pp. Price, 35 cents.

The book attempts to "strike the keynote upon which the work of the school is based," the school holding the belief that education is essentially a social

process. It is made up of a number of articles dealing with handwork, dramatics, music, and outdoor construction work,—"activities in which the controlling aim is the development of *community interest, responsibility,* and *initiative* on the part of the pupil." The contributors are Mrs. Emmons Blaine and members of the faculty of the school.

The book, with its numerous illustrations, was printed in the school print shop, and is an excellent piece of printing. The planning and production of such a book must have a wonderfully fine effect upon the spirit of a school. Teachers and pupils collaborating on a piece of work represent a school situation somewhat unique. This piece of work was well worth doing, and has been done well. —WILLIAM T. BAWDEN.

Woodworking Safeguards. By David Van Schaack, Aetna Life Insurance Co., Hartford, Connecticut. 6¾ x 9¾ in.; pp. 217. Price $1.00.

The safeguarding of machinery in manual training shops is a subject of wide discussion at the present time. With the broadening of the manual training course and the attempt to vocationalize the conduct of shops comes the demand that everything possible should be done to prevent accident and injury to the immature students using machinery. This book covers the whole field of woodworking machine safeguards, but beginning with the chapter on planing-mill safeguards, the usual manual training equipment machines are easily located. The book is fully illustrated by half-tones, and gives a variety of safeguards for each machine, in some cases home made ones. The accompanying text is clear and forceful. It is fully indexed. —V. E. W.

Leaf Key to the Trees of the Northern States and Canada. By Romeyn B. Hough, published by the author at Lowville, New York. 4½ x 6 in.; pp. 63. Price $0.75.

Field excursions for the purpose of first-hand study of our native trees is a commendable feature of manual training work for it is one means of showing students the broad relations of their subject. For such excursions a guide-book of some sort is an essential. Mr. Hough's pocket-guide is to be thoroly recommended for this use, as it is convenient in size and arrangement. The botanical glossary in connection with the leaf key will prove of great assistance to the unscientific observer while the key itself is arranged in strict botanical order for the benefit of the practical botanist. Being intended, however, as a compact manual of identification the book is as free of technicalities as is consistent with its purpose. The author is a recognized authority on the subject of trees.

—V. E. W.

The Handicraft Book. By Anne L. Jessup and Annie E. Logue. A. S. Barnes Company, New York. 6¼ x 9½ in.; pp. 128. Price $1.00.

This book gives handwork for the first three primary grades. For the first year and part of the second instructions are given in cord looping and knotting. Weaving is begun in the second year and continued in the third, including basket-making and chair-caning. With the exception of the preface, introduction, and list of supplies, the book is made up of directions, lesson by lesson, each

fully illustrated by drawings. The work on cord looping and knotting is very complete and all is given of the other topics that is suitable for the second and third years. The directions for chair caning will prove very valuable as the directions combined with the diagrams make the work easily understood.

The book is especially to be commended for this clearness of directions and the simplicity of the models. The work outlined is such as can be successfully handled with large classes in city school systems. It is equally appropriate, however, for other conditions. There has been a demand for just such a book, giving definite directions for simple yet interesting work for primary children which can be carried on under adverse conditions, at little expense, and a minimum of supervision. The problems of this book have been successfully worked out in the crowded school rooms of New York City by the author.

—V. E. W.

The Industrial Primary Reader. By Mary B. Grubb and Frances Lillian Taylor. D. C. Heath and Co. 6 x 7½ in.; pp. 128. Price $0.30.

The last decade has seen a steady growth in the feeling that the best is none too good for a primary reader, and a corresponding improvement in the artistic make-up and the subject-matter of such readers.

The subject-matter of this new reader concerns industrial activities of children. Each story is about things the children can make; thus each thought-impression may be followed by immediate expression in paper, clay, or sand. The topics will indicate the grouping of activities: "Our Home," "Paper Town," "The Farm," "The Park." At the bottom of each page is a note, suggesting the occupation which should accompany that portion of text. A few rhymes and poems, to be read to the children, are found in the pages, and at the close of the book are alphabet rhymes and suggestions to teachers.

The chief value of the book lies, we believe, in the fact that, in using it, the regular teacher and the supervisor of the elementary manual training can get together and find a practical basis of correlation. We may talk correlation endlessly without accomplishing the thing itself unless some such basis is found for making handwork a vital part of each day's activities. The trouble has always been that, with sequences worked out separately, the combination destroys one sequence or the other. This reader grades the lessons in thought, reading-growth, and handwork technique, equally. Its use will do much in the elimination of the fragmentary and unrelated character of primary manual training.

The illustrations, in silhouette, half-tone, and pen and ink, are really artistic and will certainly appeal to children. —V. E. WITHEY.

Folk Festivals. By Mary Master Needham. B. W. Huebsch, New York. 5 x 7½ in.; pp. 244. Price $1.25 net.

The increasing interest in festivals and pageants will insure a wide audience for this book, which discusses the problems in connection with festival-giving in a broad and helpful way. The chapter on "The Pioneer Festival" cannot fail of having a stimulating effect on all those who realize the office of the festival in school and community life.

That the preparation and giving of a festival furnishes an unrivaled means of cooperation between the various departments of a school, including the manual arts, is a truth, which, we fear as yet, has not come home to teachers as it should. In this possibility will lie the interest of this book for teachers and students of the manual arts. —V. E. W.

Experimental Physics for Secondary Schools. By Smith, Tower, and Turton. Ginn and Company. 7½ x 5 in.; pp. 324. 111 illustrations. Price 80 cents.

This manual by three instructors in the high schools of Chicago contains directions for 123 experiments in elementary physics. It is rendered very adaptable by references to seven leading texts at the beginning of each experiment. The directions are explicit, systematically arranged, and stimulate thought by frequent questions. A pleasing feature of the book is that emphasis is laid on fundamental principles rather than exhaustive and confusing quantitative determinations. —F. J. BOHL.

Methods of Teaching. By W. W. Charters. Row, Peterson and Company, Chicago. 5¼ x 7¾ in.; pp. 255.

This is a treatise on the technique of teaching. The methods, as stated in the sub-title, are developed from a functional standpoint. Values, motives, and control of values all are discussed with psychological minuteness. The ordinary reader would soon be lost in a maze of unfamiliar terms, but the book will find a place on the book-shelf of the student of education and the teacher of pedagogy. —V. E. W.

Art and Industry in Education, published by the Arts and Crafts Club of Teachers' College, Columbia University. Price, 50 cents in paper; $1.00 in half cloth.

This is a collection of brief articles by members of the Arts and Crafts Club of Teachers' College and by members of the faculty of the department of fine and industrial arts. Arthur Wesley Dow and Frederick G. Bonser are represented by characteristic statements. The aim of the publication has been to put into definite form and statement, if possible, the ideas and ideals of the departments of fine and industrial arts, and to show the inter-relations of the two departments. The topics cover a wide range and are interesting contributions to the literature on these subjects. The book is very attractively illustrated and printed. —V. E. W.

The Stout Institute Bulletin, March, Outline and Bibliography of Food Study. Stout Institute, Menominie, Wisconsin, 6 x 9 in.; pp. 63. Price, quarterly Bulletin, $0.50 per year.

The March, 1912, number of the Stout Institute Bulletin presents an outline of food study as taught in the domestic science work at Stout Institute. Its convenient arrangement and the full reference lists for each topic make it very valuable for suggestive and comparative purposes.

Drafting Instruments and How to Use Them. By Ralph F. Windoes, director of manual training, South Haven, Mich. Published by the author. 7½ x 10½ in. oblong; pp. 64. Price 50 cents.

This book is unlike other text-books on mechanical drawing in that it contains no problems. It can be used with any course of instruction. As is indicated by its title, it is a book describing and illustrating drawing instruments and, to some extent, their use. In addition to describing the usual instruments of the classroom it presents the special and unusual instruments and appliances of the completely equipped commercial drafting room. It contains a chapter on processes of duplicating drawings, one on definitions of geometric terms, and, at the end of the book, several ruled pages for lettering practice, two for time cards and twelve for notes and clippings to be added by the student.

RECEIVED

Uses of Commercial Woods of the United States: I. Cedars, Cypresses, and Sequoias. II. Pines. By William L. Hall and H. W. Maxwell. Two Bulletins issued by the Forestry Service of the U. S. Department of Agriculture, Washington.

From Wool to Cloth. A little book briefly describing the process of making worsteds and woolens, issued by the American Woolen Co., Boston, Mass.

Proceedings of the Department of Superintendence of the National Education Association. St. Louis Meeting. 25 cents a copy. Dr. Irwin Shepard, Winona, Minn.

Bibliography of Education in Agriculture and Home Economics. A bulletin issued by the U. S. Bureau of Education, Washington, D. C.

The Montessori System of Education. By Anna Tolman Smith. Bulletin No. 17, 1912, issued by the U. S. Bureau of Education, Washington.

Emory Oak in Southern Arizona. By Frank J. Phillips. Circular 201 of the Forest Service, U. S. Department of Agriculture, Washington.

Wood-Using Industries of California. By Andrew K. Armstrong, Engineer in Timber Tests. Bulletin No. 3, of the California State Board of Forestry, Sacramento, Calif. Contains 114 pages of text and ten full page illustrations.

Strength of Materials. By Mansfield Merriman. A sixth edition of a well-known text-book, revised and reset.

Mechanical Drawing, Part III. Machine Details. By Oscar E. Perrigo. Number 87 of "Machinery's" Reference Series.

Mechanical Drawing, Part IV. Cam Design. By Oscar E. Perrigo. Number 88 same series.

FIELD NOTES

A full course in domestic science has been added to the course of study of the Petaluma, California, grammar schools. Courses in manual training and sewing were added three years ago and have proven very popular. The domestic science department is located in the new Lincoln School, and consists of a well equipped kitchen, large dining room, store room, cloak room, and lockers. Annual education exhibits of work done in the schools have been held which have served to arouse much enthusiasm among the patrons and the general public. The schools are under the management of E. B. Dykes, who is now serving his fifth year as supervising principal.

A course in printing has recently been established in the high school manual training department at South Haven, Mich. The outfit consists of two presses and all of the necessary accessories. A good share of the expense of additional equipment to this department has been raised by the students themselves by means of sales, teas, etc. Ralph F. Windoes is in charge of the manual training, and Miss Margaret Logan of the household arts department.

Arthur Hopper, a graduate of Teachers College, Columbia University, succeeds D. K. Covvey as supervisor of manual training at Roselle Park, New Jersey.

Lockport, New York, will have manual training in the schools next year.

Dr. Frederick H. Sykes, head of the school of Practical Arts, Teachers College, Columbia University, has resigned to become president of a new Connecticut College for Women, in New London

Bergenfield, New Jersey, schools will have manual training courses the coming year.

The new union high school at Hayward, California, has manual training shops in a separate building connected with the main building by a colonnade.

The boys of the eighth and ninth grades in the Buckingham school, Springfield, Mass., are much interested in the new printing equipment and course, now a part of the manual training department.

(*Continued on p. XV.*)

FIELD NOTES

(*Continued from p. XIII.*)

The schools of Tulsa, Oklahoma, have new departments of manual training and domestic science. Buildings, especially planned for these departments, will be ready next fall, when the work can be extended further than is possible at present.

Macon, Georgia, is to have a new high school building, planned to accommodate about 1,200 students. Five or six large rooms on the first floor will be used by the manual training department of the high school.

Night short courses in domestic science, agriculture and manual training are being offered this season by the Deer River, Minnesota, schools. These courses were planned with the aim of extending the service of the high school to the adults of the community, in this way giving the school equipment increased value as an investment of the district. No tuition is charged. These first courses are elementary in scope, giving such training as will be of immediate benefit. The manual training course gives information concerning common tools and processes such as will enable householders to perform the odd jobs that need to be done about every home. Work in wood finishing, glass cutting and soldering is included in the course. H. S. Records, formerly of Frankport, Kansas, is the instructor in manual training in the Deer River high school.

Roy L. Dimmitt, supervisor of manual arts, Birmingham, Ala., has accepted the principalship of the Ensley High School in Birmingham. This school is near the west end of the city in an industrial district where it is expected to develop many technical courses and a part-time system of cooperation with some of the industries. The school is in a new building of modern fire-proof construction and adequately lighted with windows up to the ceiling and covering approximately one-fifth of the total wall space of each room. The school has a great opportunity ahead of it. Mr. Dimmitt has been the supervisor of manual arts in Birmingham for eleven years.

F. W. Chapel, formerly of Manistee, Michigan, has been added to the teaching force in the manual training department of the Evansville high

(*Continued on p. XVII.*)

FIELD NOTES

(*Continued from p. XV.*)

school, in Indiana. Mr. Chapel teaches mechanical drawing. The high school enrolment in this department has increased about seventy-five per cent in the last year, and five men are now required to handle the classes.

Toronto, Ontario, will have a million dollar technical school completed by next year.

Lorain, Ohio, will have manual training in the schools next year.

A manual training building is to be erected in the near future in Negaunee, Michigan. The structure will be 120 feet long by 60 feet wide and will have two stories and a high basement.

Amesbury, Massachusetts, has utilized an old school building to house the departments of manual and household arts.

A bill has been introduced into the Ohio legislature at this season, providing state aid for departments of manual training and domestic science in first class high schools in the state.

The Baltimore board of school commissioners voted to establish a department of household arts in the public schools of the city.

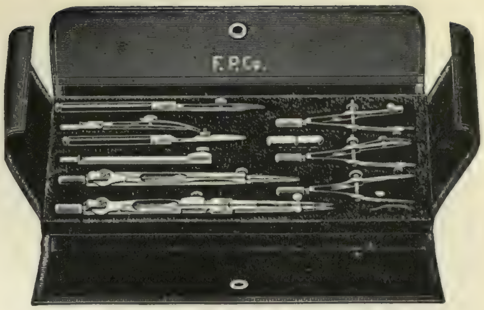
The appropriation for manual training and domestic science in the public schools of Detroit, Michigan, has been increased $39,000. Superintendent Chadsey hopes to see every school in the city equipped for these subjects.

Classes in manual training and domestic science are being arranged in the schools of Boulder, Colorado.

Connellsville, Pennsylvania, schools now have departments of manual and domestic arts.

The manual training and domestic science departments in the high school of Knoxville, Tennessee, can accomodate less than half the students who applied in February, so popular have those subjects become.

(*Continued on p. XIX.*)



FIELD NOTES

(Continued from p. XVII)

The new manual training department at Ipswich, Massachusetts, is under the direction of Charles Lunt of Marblehead. The domestic science work is taught by Miss A. Madeline Hawkes.

Miss Jennie Hylton of Sherman, Texas, is now head of the department of domestic economy at Waco, Texas.

The night school of Hammond, Indiana, giving instruction in general and practical subjects in short courses, has an enrolment of over seven hundred.

Pittsburg will soon have two additional manual training centers and one domestic science center ready to fulfill the growing needs of the city as they arise.

A manual training department has been opened in the new high school at Bismarck, North Dakota. Howard Boekeloo, of the Western State Normal School, Kalamazoo, Michigan, is director.

Domestic science and art have been introduced into the Maury High School, Norfolk, Virginia. Miss M. E. Parlett, a graduate of Teachers College, has the cooking in charge, and the domestic art is supervised by Miss E. E. Noyes, who has had charge of the grade cooking classes in Norfolk for five years.

Paullina, Iowa, has a new department of manual training in the grades.

Manual training and domestic science have been introduced in Creswell, Oregon, since the opening of school.

A class for teaching manual training to the teachers, including women teachers, will soon be organized in Cincinnati.

Next year Great Falls, Montana, will have a full four years' course in manual training in the high school.

(Continued on p. XXI)

FIELD NOTES

(Continued from p. XIX)

H. S. Records is now teaching manual training at Deer River, Minnesota. Mr. Records was formerly located at Wahpeton, North Dakota.

Brenham, Texas, has installed agriculture and manual training under the direction of W. W. Stanfield, of Chanute, Kansas. Domestic science is also being added.

Manual training is a new course in the schools at Harrisburg, Texas.

Carroll Edgard, for ten years instructor in manual training in the country high school at Elkton, Maryland, has resigned in order to enter the employ of the city of Baltimore, in the engineering department.

Sulphur Springs, Texas, has secured the services of Miss Fay Lucas, of Sherman, to teach the domestic science work.

G. W. Dauth is teaching manual training in Rochester, New York. Mr. Dauth was at El Paso, Texas, last year.

The newly organized Muncie Normal Institute, of Muncie, Indiana, combines into one institution the Eastern Indiana Normal University Association, the Marion Normal College and Business University, the National Manual Training Corporation, the Indiana Manual Training Company, and the Muncie Conservatory of Music. The Institute has courses in manual training, home economics, and agriculture.

The Central Manual Training School of Philadelphia has been consolidated with the new West Philadelphia High School for Boys. In the new school thoroly modern equipment has been installed and the pupils will have the opportunity to learn many branches of mechanical arts.

The manual training shops in the new building are arranged with adjoining offices for instructors and tool rooms. The side walls are finished in white enameled brick, the ceilings in hard plaster, and the floors in cement.

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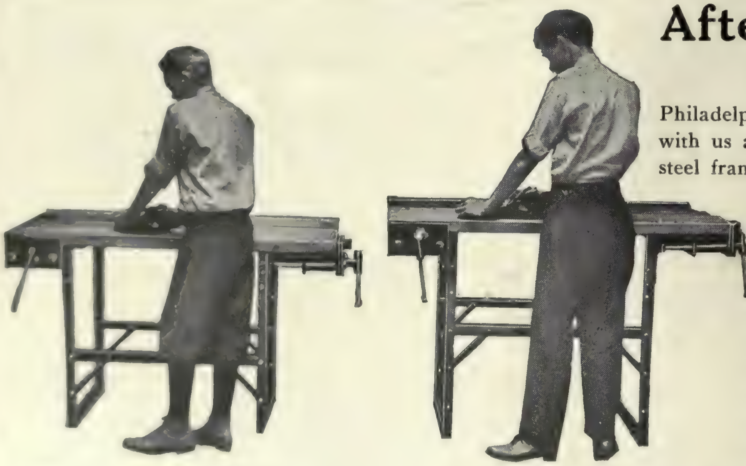

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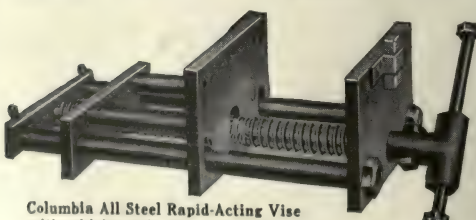

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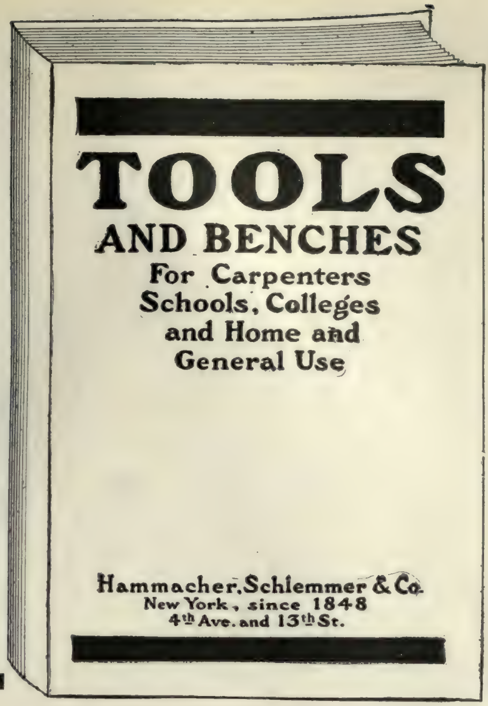

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A Gate Bell, *Youth's Companion,* Aug. 1, p. 400. *

The Graduation Motto, L. L. Bailey, *School Arts Book,* June, p. 1035. *

Grammar and Proofreading, XII, F. H. Teall, *Inland Printer,* June, p. 399.

A Gymnasium Out-of-Doors, C. H. Clandy, *Woman's Home Companion,* Aug., p. 22. *

The Handicraft House, Louise Shrimpton, *House and Garden,* August, p. 81. *

The Handling of "High-Speed" Steel Cutters, J. F. Hobart, *Wood Craft,* Aug., p. 146. *

Hand Mixing of Concrete, Sanford E. Thompson, *American Carpenter & Builder,* August, p. 81.

Handwork and Its Relation to Dramatic History, Continued, George R. Chadwick, *Educational Handwork,* April, p. 61. *

A Handy Drawing-Table and Board, J. Y. Dunlap, *Wood Craft,* Aug., p. 158. *

A Handy Pair of Trestles, James Barry, *Carpenter,* Aug., p. 45. *

Hanging Wall Cupboard, J. H. Rudd, *Furniture Mfr. & Artisan,* July, p. 324. *

The High School and the Citizen, J. Lyon Barnard, *Saturday Evening Post,* Aug. 31st, p. 8 *

Hints About Small Band-Saws, H. H. Parry, *Furniture Mfr. & Artisan,* June, p. 264.

Hints on Saw-Setting and Filing, John Upton, *Carpenter,* July, p. 41.

A Home-Made Book-Case, John Upton, *Carpenter,* Aug., p. 46. *

House-Builders to the Birds, Harriet Gillespie, *St. Nicholas,* June, p. 698. *

How to make a Drafting Table, Ira S. Griffith, *American Carpenter & Builder,* August, p. 54. *

How to Make a Plate-Rack and a Book-Trough, Ira S. Griffith, *American Carpenter & Builder,* May, p. 72. *

Industrial Art in Pubic Schools, *Craftsman,* June, p. 345.

Influence of Antique Models on Present-Day Furniture, Paul D. Otler, *Building Age,* August, p. 421. *

The Kodak in Art Instruction, Bessie R. Murphy, *School Arts Magazine,* Sept., p. 14. *

Landscapes in Tapestry: Realism of Rendering Shown in Some Recent Products of a German Loom, H. Behr, *Arts and Decoration,* Aug., p. 357. *

Lawn or Porch Furniture, Ira S. Griffith, *American Carpenter & Builder,* Sept., p. 70. *

Lubricating Oils and Lubrication, M. E. Dick, *Furniture Mfr. & Artisan,* May, p. 210.

Machine Woodworking for the Shop With Only One Machine, Charles Cloukey, *American Carpenter & Builder,* June, p. 44. *

Making Model Aeroplanes, F. A. Collins, *Woman's Home Companion,* Sept., p. 34. *

Manual Training Here and Abroad, J. N. Nind, *Furniture Mfr. & Artisan,* June, p. 265.

Melodic Design, Mary L. Sabourin, *School Arts Book,* May, p. 891. *

Mensuration in Furniture Work, A. T. Deinzer, *Furniture Mfr. & Artisan,* July, p. 314.

Methods and Standards of Glue Testing, R. L. Fernbach, *Wood Craft,* Aug., p. 162.

Microphotographs of the Structure of Wood, *Wood Craft,* July, p. 114. *

Mitered Panel and Raised Moldings, Owen B. Maginnis, *Carpenter,* May, p. 44. *

* Illustrated.

Model Small Woodworking Shop, *American Carpenter & Builder,* Sept., p. 38. *

Motors for Small Boats, *Youth's Companion,* May 2, p. 238. *

An Old Colonial Farmhouse that Became a Modern Home, Beatrice C. Wilcox, *American Homes & Gardens,* August, p. 284. *

Old-Fashioned Hooked Rug, *House and Garden,* August, p. 104. *

Opportunities in the Study of Wood Structure, *Wood Craft,* May, p. 64.

Organized Handwork—Paper Work, Jessie Davis, *School & Home Education,* May, p. 398. *

Organized Handwork: Weaving, Jessie Davis, *School and Home Education,* June, p. 442. *

Ornamentation of the Early Stone Architecture of India, Charles W. Stoughton, *Architectural Record,* August, p. 153. *

Our Schools and the Apprentice, Edwin G. Cooley, *Furniture Mfr. & Artisan,* June, p. 270.

The Paper for the Job, II, F. James, *Inland Printer,* June, p. 360.

The Pedagogy of Handwork, III, W. A. Bone, *Educational Handwork,* May, p 73.

The Pedagogy of Handwork: Experience With Things, W. A. Bone, *Educational Handwork,* June, p. 93.

Permanent Watering Tanks of Concrete, *Prairie Farmer,* May 15, p. 8. *

Pith Flecks Found in Fine-Textured Wood, S. J. Record, *Wood Craft,* Aug., p 143. *

Portfolio of Current Architecture, *Architectural Record,* August, p. 139. *

A Portable Vacation House, Clarence A. Brown, *Woman's Home Companion* June, p. 34. *

Practical Training for Girls, Isabel Cleghorn, *Educational Handwork,* May, p. 69.

Practical Varnish Notes for Wood-finishers, A. Ashmun Kelly, *Wood Craft,* August, p. 160.

Preparation of Stains, W. K. Schmidt, *Furniture Mfr. & Artisan,* May, p. 222

Primitive Industries, A. H. Quiggin, *Child Life,* May, p. 102.

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Primitive Working Methods and Tools in China, F. A. Foster, *Wood Craft* Aug., p. 140. *

Problems of the Finishing Room, W. K. Schmidt, *Furniture Mfr. & Artisan* July, p. 348.

Problems in the Experimental Pedagogy of Drawing, Walter Sargent, *Journal of Educational Psychology,* May, p. 264.

Refractory Woods and Some Substitutes for Them, *Wood Craft,* July, p. 116

Remodeled House, Gardner Teall, *American Homes and Gardens,* August, p. 267. *

A Roller-Coaster, *Youth's Companion,* May 2, p. 239. *

Rules for Inspection of Lumber, G. D. Crain, Jr., *Furniture Mfr. & Artisan,* Aug., p. 398.

Rustic Garden Seats and Shelters, Mary H. Northend, *American Carpenter & Builder,* August, p. 44. *

School Gardens and How to Begin Them, Frances Duncan, *Garden Magazine,* Sept., p. 57. *

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A Set of Wall Shelves, Ira S. Griffith, *Furniture Mfr. & Artisan,* May, p. 216. *

Shaft Bearings, Oil Grooves, and Grease, J. H. Hobart, *Wood Craft,* June, p. 74. *

Should Manual Training Be Vocational, H. Holman, *Educational Handwork,* April, p. 52.

Simple Lessons in Pottery, John Young, *Educational Handwork,* June, p. 105.

Simple Sashes for Graduation, *Youth's Companion,* May 2, p. 242. *

Some Good Problems in Practical Design, Amelia B. Sprague, *School Arts Book,* May, p. 881. *

Some Possibilities of Simple Machines: Buzz-Saw, W. D. Graves, *Wood Craft,* July, p. 118. *

Some Viennese Flower-Stands and Vases, A. S. Levetus, *International Studio,* Sept., p. 185. *

Splash-Damming on the Big Sandy, H. H. Gibson, *American Carpenter & Builder,* June, p. 48. *

Stain Material and Formulae, W. K. Schmidt, *Furniture Mfr. & Artisan,* June, p. 286.

Stencils from Nature, Harriet Joor—Lucy Throop, *Woman's Home Companion,* August, p. 31. *

A Study Course in Advertising, Lesson VI, *Inland Printer,* July, p. 550. *

Study of Plant Form for Decoration, J. H. Rudd, *Furniture Mfr. & Artisan,* Aug., p. 380. *

Study of Practical Cabinet-Making, J. H. Rudd, *Furniture Mfr. & Artisan,* May, p. 214. *

A Sun-Dial, C. H. Ince, *Educational Handwork,* June, p. 104. *

Table Tops, Wood Warping, and Desks, P. Hanscom, *Wood Craft,* Aug., p. 144.

Tables: Their Development, Design and Construction, John Bovingdon, *Wood Craft,* July, p. 110. *

A Telephone Table, Ira S. Griffith, *Furniture Mfr. & Artisan,* June, p. 269. *

Terra-Cotta Garden Furniture, *Craftsman,* August, p. 567. *

Theodore Hanford Pond, Craftsman, W. W. Brown, *International Studio,* Sept., p. XLIII. *

The Trail of the Old Stub Pen, F. H. Aldrich, *Inland Printer,* July, p. 513. *

Training for Motherhood, Harold Bolce, *Good Housekeeping,* September, p. 292. *

Type Faces, W. E. Stevens, *Inland Printer,* Aug., p. 694. *

Umbrella Stand and Taboret, Ira S. Griffith, *American Carpenter & Builder,* July, p. 64. *

The Use of the Forstner Bit, *Wood Craft,* June, p. 89. *

The Value of Thoroness, Walter Sargent, *School Arts Magazine,* Sept., p. 19.

Varnish and Its Use on Furniture, L. V. Redman, *Furniture Mfr. & Artisan,* June, p. 273.

Varying Characteristics of the Same Woods, S. J. Record, *Wood Craft,* July, p. 108. *

A Wall Plate-Rack, Ira S. Griffith, *Furniture Mfr. & Designer,* Aug., p. 385. *

What the Art Schools are Doing, *Arts & Decoration,* Sept., p. 398. *

Work-Bags, and Crocheted Yokes, Helen Marvin, *Woman's Home Companion,* July, p. 35. * p. 39. *

Writing Desk and Book Rack, Ira S. Griffith, *American Carpenter & Builder,* June, p. 64. *

* Illustrated

TRADE NOTES

We hear of no "hard times" among the factories that are trying to meet the demands of the school trade. For example, the Abernathy Vise and Tool Company of Chicago report that they have run their factory 23 hours a day nearly all summer, yet they have not been able to keep even with orders during the rush season. Their vises have recently gone to schools in New York, Philadelphia, Pittsburgh, Cleveland, Cincinnati, Springfield, Milwaukee, Spokane, Tacoma, Portland, Los Angeles and many smaller cities.

The Alexander Dodds Company of Grand Rapids, Michigan, report July shipments of two machines to Vienna, two to Cologne, one to Paris and one to Berlin. It is not an easy matter to build up a foreign trade in these days of strong competition in machine design and construction. A machine must have superior qualities to win its way in a foreign market, especially where the price of labor is lower than here. Many teachers and more practical shop men, however, know the fine quality of work that can be done on the Dodd saw table.

A new plane has just been brought to our attention. It is called the Buckeye and is made by the Buckeye Saw Vise Company of Cleveland. They claim it is the simplest and quickest to adjust of any plane on the market. We have never used one, but we are much interested in the manufacturer's statement. Its simplicity will commend it to teachers who are selecting planes for school use.

A strong testimony for the Goodell Mitre Box was given to us in conversation a few days ago by a tool salesman representing several manufacturers in the East. He said that the total cost of repairs on mitre boxes at the factory, covering eight years of sales, has not reached $10.00. The steel construction has brought about this result. The Goodell Manufacturing Company is convinced that steel is the right material to use in mitre box construction. They say cast iron is too brittle and that wood does not stand the dampness—even that which frequently penetrates a carpenter's tool chest.

Every time we get a piece of printed matter from E. H. Sheldon and Company it contains several new tools or devices especially suited to school use. This time in addition to "Sheldon's Big 4"—woodworking benches, domestic science

(*Continued on p. XXXVII*)

TRADE NOTES

(*Continued from p. XXXV*)

tables, wood-turning lathes and drawing stands —we find a continuous screw vise and a heavy speed lathe. We take every opportunity to welcome a new continuous screw vise because we believe in such vises for manual training school use.

Since we first saw the 4 inch draw-knife made by the Simmons Hardware Company of St. Louis we have wondered why maunal training schools ever buy the longer knives. Isn't 4 inches of cutting edge about all we would ever use? and isn't a short blade safer and better to handle than a longer one? The 4 inch Keen Cutter draw-knife is certainly a convenient little tool, yet a very strong one.

Earl E. Eby, of Wilkinsburg, Pa., comes forward with a Lumber Cost Computer, a new device to save the teacher's time in selling lumber to students. It is a chart that enables one to find the cost of any piece of lumber up to 15 feet in length and 36 inches in width.

The Buffalo Dental Manufacturing Co. that furnish so many tools and appliances for art metal work is advertising a new combined blowpipe and Bunsen burner. If desired this can be used with air blast from the mouth for the most delicate soldering.

The Taylor Holden Co., of Springfield, Mass., announce that they are holding to their old price on Haytol Drawing Paper tho prices of paper have been advanced.

The Disston Crucible, the little monthly magazine published by Henry Disston & Sons is continuing the interesting series of illustrated articles on "The Saw in History." The May number gives illustrations of some of the earliest mill saws in this country.

The L. S. Starrett Co., of Athol, Mass., have opened a fine store at 17 N. Jefferson St., Chicago. It is organized with special reference to giving the promptest and best service to their Western trade.

The town of Crossett, Arkansas, seems to have awakened to the fact that manual training and domestic science are essential in the education of boys and girls. By popular subscription enough money was raised to start the work. The equipment of the manual training building includes an Oliver band saw, three Oliver lathes and a Fairbanks-Morse gasoline engine and dynamo, besides twelve Oliver work benches.

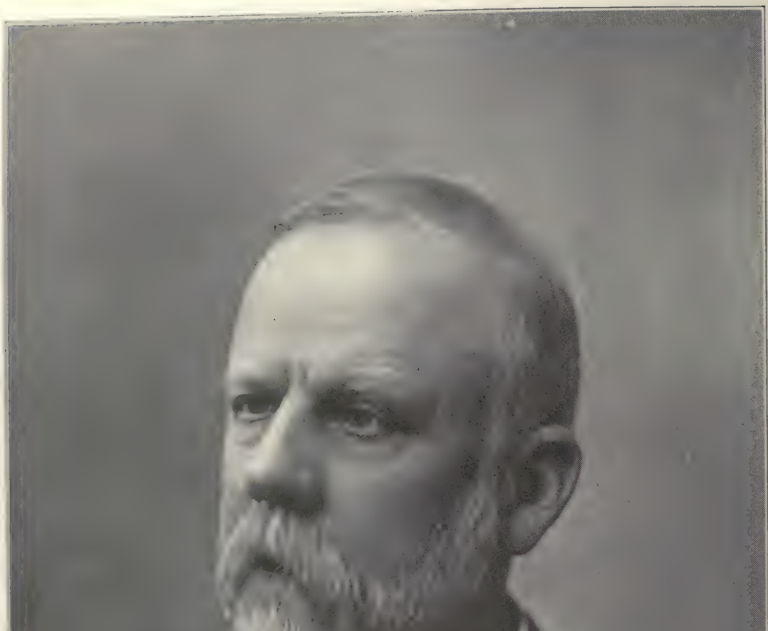
BOOK NOTES

About a year ago the Manual Arts Press issued a descriptive catalog of *Books on the Manual Arts* which was in fact a bibliography of the best books on the several subjects treated, regardless of who published them. The expense in producing this catalog was large because of the time spent in searching out the best books as well as in arranging the list in convenient form for reference. The aim was to tell enough about each book to enable a librarian, as well as a teacher of the manual arts, to find just the right book to meet a definite need. Immediately after the publication of this catalog many requests were received for extra copies—often for ten to twenty-five from librarians, schools and dealers, and up to one hundred copies from normal schools. The supply was soon exhausted and a second edition printed. During the year the work of sifting and selecting books has continued and now a new catalog is in process of printing. This *1913 Catalog* will be even more convenient than the one issued last year, because it will contain a complete subject and author index and will include many new books.

When *Wood and Forest* by William Noyes was published last spring by the Manual Arts Press, there was some doubt whether the manual training teachers of the country would very generally purchase a three-dollar book, even the it were recognized as being one of superior merit, containing what had never before been offered at that price, and especially suited to their needs. At first the publishers tried to make *Wood and Forest* a two-dollar book, but they found that to be impossible if the whole work were to be published in one volume and the Manual Arts Press standard of quality maintained. The action taken, however, in keeping up the quality has been fully justified by results. The first edition has been exhausted and a second one has already been printed. From many sources has come the statement that it is by far the best school reference book on trees and woods.

It has sometimes been said that modern pedagogy has had little to do with the writing of college text-books, and not enough with high school text-books. If this has been true in the past, a change is surely taking place. The old books are being discarded for modern texts. The newer ideals are gaining ground. One little corner of the text-book field, that of descriptive geometry, has remained very conservative for many years. But during the past two or three years several new books have come forward to contest the place of the older standard books. Among these is a most convenient, practical and effective text-book written by Professor H. W. Miller, head of the General Engineering Drawing Department at the University of Illinois. The results obtained by the use of this book have been surprising. At first the book was published by the author in mimeograph sheets, then in printed form. Several months ago it was taken over by the Manual Arts Press, and a new edition, revised again, is just coming from the press. The copies will be ready for distribution early in February.

Several years ago the *Manual Training Magazine* published an article on the construction and flying of kites by Charles M. Miller, assistant supervisor of manual training, Los Angeles, California. This was so much in demand that it was republished in the Manual Training Reprint series. In this form it has had a steady sale ever since that time. A few months after the article appeared in the *Manual Training Magazine,* Mr. Miller wrote one on artistic kites for the *School Arts Book.* During the past three years Mr. Miller has been making a more extended study of kites and has still further developed the annual kite tournament in Los Angeles. During that time, also, he has been working over and adding to the material in the two articles referred to until now he has produced what will undoubtedly become the standard book on the subject, so far as schools and school boys are concerned. It is entitled *Kitecraft and Kite Tournaments.* The manuscript of the book is already in the hands of the printers, and the completed book will be issued in attractive form early in the spring. Mr. Miller is one of several American teachers of manual training who believe that the handicrafts taken up voluntarily by boys in their sports should be made a more effective means in their education.



WM. L. SAYRE

VOLUME XIV NUMBER 2

105

MANUAL TRAINING MAGAZINE

DECEMBER, 1912

THE FUTURE OF THE MANUAL TRAINING HIGH SCHOOL IN VOCATIONAL EDUCATION.

CHARLES B. HOWE.

A QUARTER of a century ago the advocates of manual training were waging a determined and an aggressive campaign for the adoption of their principles. Eventually, the fight was won and for the past ten years the recognition and application of those principles has been all but universal. Now a situation has developed which puts the friends of manual training on the defensive and the indications are that some of the fighting must be done over again.

In the argument for the vocational school it has been pointed out that the manual training school is a failure from the standpoint of vocational training. Before conceding this statement and suggesting any plan for meeting the objections, let us review the origin and purpose of the manual training high school.

In the spread and development of the manual training idea, first and foremost in the ranks of the pioneers was Calvin M. Woodward of St. Louis. In an address before the National Teachers' Association at Saratoga, July 1883, Dr. Woodward said: "The word 'manual' must, for the present, be the best word to distinguish that peculiar system of liberal education which recognizes the manual as well as the intellectual. I advocate manual training for all children as an element in general education. I care little what tools are used, so long as proper habits (morals) are formed, and provided the windows of the mind are kept open toward the world of *things* and *forces,* physical as

well as spiritual." And again in an address delivered before the Social Science Association of Philadelphia in December, 1885, he said, "We believe that mental activity and growth are closely allied to physical activity and growth, and that each is secured more readily and more fully in connection with the other than by itself."

The philosophy of manual training has never been more clearly expounded than in a paper read at the meeting of the American Institute of Instruction by Dr. Nicholas Murray Butler in July, 1888 at Newport. Dr. Butler said: "The manual training movement is based on a sound pedagogic principle and manual training must be introduced into schools of every grade. * * Manual training is mental training through the hand and eye, just as the study of history is mental training through the memory and other powers. * * It is truly and strictly psychological. In view of the prevalent misconception on this point, too much stress cannot be laid upon the fact that manual training, as we use the term, is mental training. * * It is the mind that feels and fashions, and the mind that sees; the hand and the eye are the instruments which it uses. The argument for manual training returns to this point again and again. * *"

Dr. Felix Adler expressed his opinion thus: "Among those who have given most thoughtful attention to the subject, the following points are accepted, namely, that manual training means the training of the intellect as well as the hand; that its chief recommendation is that it offers a new instrumentality for training the mind."

Superintendent C. F. Carroll of Worcester, Mass. said: "* * Manual training is from the beginning an indispensable part of a liberal education."

In an address delivered before the Present Day Club of Dayton, Ohio, Superintendent Hailman said, "From these considerations it appears that manual training as an educational factor has deeper roots than the transient industrial needs of our time. These roots lie in the innate nature of man, in the demand for his full, all sided development in individual and social relations."

The most complete and comprehensive exposition of the psychological principles of manual training ever made were set forth in an address delivered by Dr. T. M. Balliet before the Massachusetts Teachers Association at Worcester, Nov., 1895. The whole tenor of Dr. Balliet's address was for the purpose of demonstrating "that manual training is but another form of mental training, and that the hand is but a sixth

sense,—an additional avenue to the mind." And "whilst the manual training school does not aim to teach a boy a trade, it gives him a training which will enable him at once, on leaving school, to earn from $1 to $2 a day."

Regarding the vocational aspect of the subject in his "Argument for Manual Training," Dr. Butler said: "No one with any appreciation of what our public school system is and why it exists, would for a moment suggest that it be used to train apprentices for any trade or for all trades."

Dr. Woodward stated his position as follows: "The object of the introduction of manual training is not to make mechanics. * * Our great object is educational: other objects are secondary. * * A public school must put no bar to a boy's development; the upward roads are always to be left open. A public trade school in America would be out of place. * * The first reason why I think we shall not wisely attempt to teach the details of actual trades is, that the scope of a trade is far too narrow for general educational purposes. * * Should we not abstract all the mechanical processes and manual arts and typical tools of the trades and occupations of men, and arrange a systematic course of instruction in the same, and then incorporate it into our system of education? Thus, without teaching any one trade, we teach the essential mechanical principles of all."

Similar expressions upon the purpose and character of manual training from the late Superintendent Seaver, Dr. G. Stanley Hall, and many others might be cited. It must be understood that in quoting the opinions expressed above it is not the purpose to maintain that these are necessarily the views held and advocated by these parties at the present time, neither is it desired to justify the continuation of the manual training school prototype in the future, nor to maintain that vocational training is not a rational and logical development. But from the historical standpoint and in the light of its origin and purpose is not the manual training school as an educational product exactly what it was intended to become?

As Dr. Woodward said again: "The prevailing motive in the organization of the first manual training school was to furnish opportunity and stimulus for the growth of certain powers of the mind through the instrumentality of the hand and material things." Or, in the words of his famous aphorism, "Put the whole boy to school."

In view of the educational principles out of which the manual

training idea grew and developed it may be demonstrated that the manual training school has achieved its purpose. Evidence is at hand to support this statement, from college and university presidents, superintendents, and other educational experts. The prevailing consensus of opinion was well expressed by the late president of Johns Hopkins, Dr. Daniel C. Gilman, who said: "Manual training is an essential part of good education, whether that education is restricted to the common school or carried on to the highest discipline of technical schools and universities." Whatever may be offered in the way of criticism of the manual training school is certainly not justified from the point of view of its origin and purpose and in all fairness the educational critics should refrain from pulling down the foundation of what is destined to become the finest structure in our education.

In his "Argument for Manual Training" the words of warning which Dr. Butler uttered to those who would pull everything to pieces were never more appropriate than now. He said:

> It would be a gross error for those who attach themselves to a new educational movement, to denounce preceding systems and conditions as misleading, worthless, bad. The most beautiful flower depends for its existence upon a clumsy and unattractive root. The flower loses its beauty and attractiveness if torn from the source of its life and strength. So it is with educational systems. The last makes the next possible; and the newest has quite enough to do without undertaking the profitless task of pointing out how all earlier systems would have failed had they been called upon to do something which in the nature of the case it was not possible for them to be called upon to do. Growth is continuous. Each stage is necessary; and it is worse than useless to attempt to exalt any one at the expense of that which laid the basis for it. Each system and each theory of education may have been the best for its own time.

The evolution of the manual training school as a type has broadened and enriched the whole school curriculum educationally and has made possible another type; the former was its chief end and aim; the latter an inevitable result.

WHAT IS THE FUNCTION OF THE HIGH SCHOOL.

The character of the manual training school of the future depends almost wholly upon the purpose of secondary education. Here, again, our perspective is corrected and widened in the light of the historical development of the high school. It is well known that the initial

purpose of the first high school or "academy" was to furnish a better preparation for young men who were destined to study for the ministry. The original purpose of secondary education was, therefore, vocational, and up to the present time this idea has persisted. The chief aim and end of the high school has been to prepare pupils for college, whether they wished to go there or not. The result of this policy as affecting present economic conditions is apparent. The boys of the country have been educated away from their natural environment and vocation into other business and professional channels. In the midst of the greatest material for educational wealth which the nation possesses, the country boy has been faced away from his opportunities and made to look upon the competition and strife of the so-called "learned professions" and encouraged to achieve a possible success at the expense of a free and independent life full of material and spiritual richness. If the same amount of time and energy had been spent by the schools in the country upon agricultural education, and if the results had been applied to the extent that has been done in other directions, there probably would be no problem of the high cost of living today.

The first differentiation in the high school course recognizing the necessity for vocational training other than preparation for college came in the form of the commercial course. Other and various changes and modifications of the traditional course of study have been accomplished by always keeping in sight the fact that the purpose of secondary training is vocational. Turn in whatever direction we may, we are face to face with the fact that the end and aim of the high school always has been and is now, largely vocational. As a problem of educational policy, therefore, it is as to content and not as to kind.

There is only one possible answer to our question, then, namely, the manual training high school of the future must be a vocational school, pure and simple, as all high schools are now and probably will be in the future.

The immediate educational problem of the manual training school is the determination of its particular vocational function. Should it continue as a general utility school and devote three-fourths of its energies to college preparation or should it be a technical secondary school intended primarily to furnish a definite vocational training to the far greater number who do not go to college or the professional schools, or should it do both?

In answering this question let us first consider the matter of college preparation. For a number of years the professional and engineering schools have been offering six-year courses combining arts and professional subjects with a view of inducing the student to secure a broad, liberal education in the humanities and economics in addition to his strictly professional training. This policy does not seem to have met with great success and as far as engineering is concerned it has been a failure. The reason for this is not necessarily a lack of interest but may be attributed to the fact that the strictly cultural period in the career of the student has passed and his chief interest is now centered upon his professional studies. Recognizing, as we must, the cultural value of the humanities to the engineering and other professions it would seem that the inevitable policy of these schools and colleges will be to maintain their requirements in the humanitarian branches. Not only is this true but we must expect to find increasingly rigid requirements in the matter of thoroness, particularly in English expression and mathematics. The engineering profession appreciates and will support this point of view.

It can readily be seen that if the manual training high school is to continue as a preparatory school it can not place much emphasis upon the mechanic arts side of its program and under those conditions it ceases to be a manual training high school and becomes again a preparatory school with a manual training annex.

The value of the mechanic arts as a preparation for engineering and technical courses is precisely the same as their value in the preparation for other professional schools, arts, and sciences. By the "standpatter" of the traditional manual training school this statement will no doubt be condemned as radical, but it is amply supported by pedagogical analysis, as well as by those who are responsible for the educational policies of our engineering schools.

That manual training has a value which demands that it be included in all high school courses has been established and requires no further demonstration. Manual training was advocated and adopted upon sound educational and economic grounds, and the results have amply justified the predictions of those who supported it. Dr. Hanus says: "In addition to the purely intellectual courses of the school we should maintain in *every secondary school,* whether public or private, courses in manual training, which together with their general educational aims minister directly to vocational and social aims."

In the readjustment of relations between the preparatory school and college which seems to be imminent, provision should be made for manual training in all courses of every high school. The amount of time to be devoted to this subject will, of course, have to be somewhat less than that of the present manual training high school, but if two periods per week were devoted to drawing and three to shop, making a total of five, it would not affect other subjects unfavorably but would establish the educational balance for which we are striving.

REASONS FOR MODIFICATION OF AIM.

That the manual training high school is about to abandon the field of college preparation and address itself solely to the ends and aims of secondary technical education is *inevitable*. The reasons for this statement are as follows: (a) Preparation for engineering and professional schools should be of the liberal type which can best be supplied by the general high school with manual training as a part of its curriculum; (b) The large and expensive plant equipment of the manual training high school is not requisite or desirable for college preparation and can be justified only for the needs of vocational training; (c) The demand for secondary vocational training is great and must be satisfied by the establishment of the technical high school.

The only valid objection to the establishment of the technical high school as a secondary vocational school is that a choice of occupation to a certain extent must be made by the boy at too young an age. But the same objection might be urged against the commercial high school and others, and while it is true that "we should keep open toward the top," yet it is also true that the great majority of children of that age must of necessity choose an occupation. We committed ourselves to this policy when we began the establishment of differentiated high schools.

The choice of an occupation is a very serious matter and is one of the four most important *epochs* in the life of the individual. A great deal more could and should be done by those in the administration of the secondary schools in assisting pupils in this matter. The taste, ability, and natural adaptability of the pupils should be discovered as far as possible, and they should be informed as to the character and emoluments of the various trades and professions. It is a common thing to hear a boy say that he intends to study this or that

branch of engineering without having the slightest conception of what it is like or whether his abilities lie in that direction.

It would be a good plan in this respect if the first year in all high school courses were identical, thus postponing the choice of an occupation for a year. The more feasible plan however, would be the adoption of the "six and six" scheme—six years of elementary school, three years of junior high school, or trade school, and three years of senior high school. It is possible that the development of the trade school may eventually force the adoption of this plan.

As evidence of the fact that the secondary technical or vocational school is about to succeed the manual training high school it should be noted that both Boston and Chicago have taken this step and that it is soon to be done in other cities. In Chicago there are provided eleven four-year courses of which seven are strictly vocational, and ten two-year vocational courses.

As a matter of fact the secondary technical school idea is not a new one. For many years Pratt Institute, the California School of Mechanic Arts and others have been working on this plan and the success of these institutions leaves no room to doubt either their practicability or the demand for this type of school.

The immediate field of the secondary technical school is found to lie in training for positions of responsibility such as, foremen, superintendents, operators, inspectors, draftsmen and designers in various manufacturing and industrial pursuits, engineers and superintendents of office buildings and institutions, and civil service positions requiring technical education in municipal, state, and government departments.

CURRICULUM OF THE SECONDARY SCHOOL.

It is not difficult to predict what the character and scope of the curriculum is going to be in the secondary technical school. The work falls naturally into the following groups:

I. English, American history and civics, industrial history and business economics.
II. Mathematics—practical, applied mechanics, business system and accounting.
III. Science—general science, physics and chemistry, and elective.
IV. Drawing and design.
V. Shop practice.
VI. Laboratory practice—mechanics, materials, steam, electricity, etc.

VII. Specialization group. At least one year of major study in one of the following:

1. Architectural drafting.
2. Building construction.
3. Industrial chemistry.
4. Art and design.
5. Machine drafting.
6. Electricity.
7. Machinery and manufacturing.
8. Mechanic arts.
9. Power plant.
10. Surveying and topography.

In the teaching of English the most important result will be to secure the correct speaking and writing of ordinary every-day English together with facility in thought expression. Emphasis should be placed upon civics, particularly municipal. Industrial history will include the development of the steam-engine from Banca's wheel to the modern turbine, electrical discovery and invention, and the evolution of iron, steel, and the other principal manufacturing industries, together with a history of trade and commerce and their influence upon the progress of civilization. The study of business economics will include correspondence, ordinary business and legal forms and practice, legal tender and bills of exchange, banking methods and office systems, transportation, specifications and contracts.

The fundamental principles of algebra, geometry, and trigonometry must be studied together with plenty of practical problems. The field of applied mechanics provides a wealth of material for this kind of teaching. Calculations, estimates, stock and cost accounting, and a study of efficiency are of the greatest importance.

The sciences should also be studied with particular reference to their value and application to industry. But in these as in all other subjects breadth must not be sacrificed too much for immediate utility. Here is a splendid opportunity for the practical science man.

The remaining groups of studies constitute the backbone of the utilitarian side of the secondary technical school and should be characterized by thoroness as well as comprehensiveness, and more especially by their being up-to-date in conventions, technic, and methods.

The personnel of the teaching force in the technical high school is a matter which should be considered second to none in importance. The manual training school as conceived and developed is an academic institution under academic administration, and with its entire teach-

ing force, including a large proportion of the teachers in mechanic arts, chiefly academic in training and character. The products of such a school are essentially academic and are responsible for most of the criticism that has emanated from the practical man. It is self-evident that the coming technical high school must be under the administration of, and as far as practicable include in its teaching force, men of technical training and experience, while the teacher of mechanic arts in these schools will be required to possess training in and experience at the trade which is fundamental to his particular line of work. Opportunity must be afforded, also, for the teaching force to keep in touch with modern practice and methods, otherwise the results in the future will not be much better than the academic products of the past.

During the past decade the efficiency curve of the manual training school in its relation to educational progress has risen little. However, it is pointing in the right direction and during the next decade it will undoubtedly rise rapidly. To justify its existence as a type of vocational school, the technical high school must occupy its field in a forceful and efficient manner and yield results commensurate with its opportunities and in proportion to the expense of its maintenance.

OAK TYPEWRITER DESK MADE FOR THE SUPERINTENDENT'S OFFICE BY MEMBERS OF SENIOR CLASS OF THE MEDFORD, ORE-GON, HIGH SCHOOL, 1912.

THE THEATER: A SECOND GRADE PROBLEM.

MARY C. SCOVEL.

THE problem of the theater in the second grade gives a constructive problem of many possibilities. The doll house in the first grade retains for the little child just entering school his love and knowledge of home. In the second grade his love for stories develops. He begins to feel his own power to do things. His imagination peoples the world with beautiful fairies, who accomplish such wonderful things. Then the mythical stories have so much pleasure for him. The theater fills the need of making more interesting some of these stories—stories that are alive and real, and yet give scope for the imagination. O! that beautiful, wonderful imagination,—even in constructive problems we must consider it.

The theater gives many problems of educational value and the interest of the child is so great when working them out that the element of joy and happiness is seen in his every movement.

THE THREE BEARS.

The story selected for this problem was that of "The Three Bears." For a moment before proceeding to the making of things, let us consider the knowledge that is necessary to underlie this construction. It is well to know how the world appears, for this story tells of a woodland scene. Here is a chance for the observation and study of nature. It may be a woodland of the old gnarled oak trees—perhaps of the graceful maple. What does the idea of woodland convey to the child? —one tree or many? When many trees grow close together, note how tall and slender the trunks become. The leaves must have sunlight so the branches grow high. Thus the perspective of trees must be studied. Those trees near by are larger and more distinct than those far away. Near trees are taller than those at a distance. And what a good lesson in water color could precede or be connected with this problem! Glorious spring-time with its blue sky and velvety shades of green for grass and leaves. Then those strong dark purple tree trunks standing close together with branches intertwined. Then, winding in and out, seen here and there, that crooked little yellow path leading at last to the bear's house—so far away that it looks almost purple.

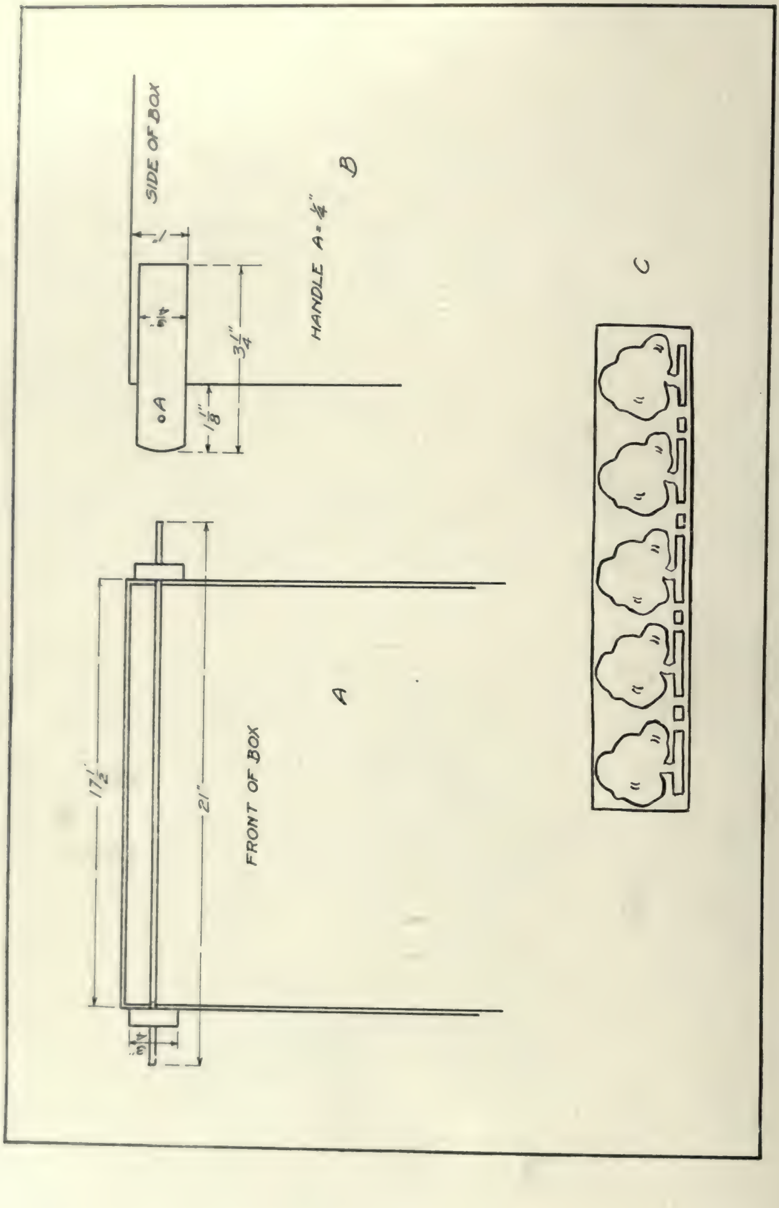
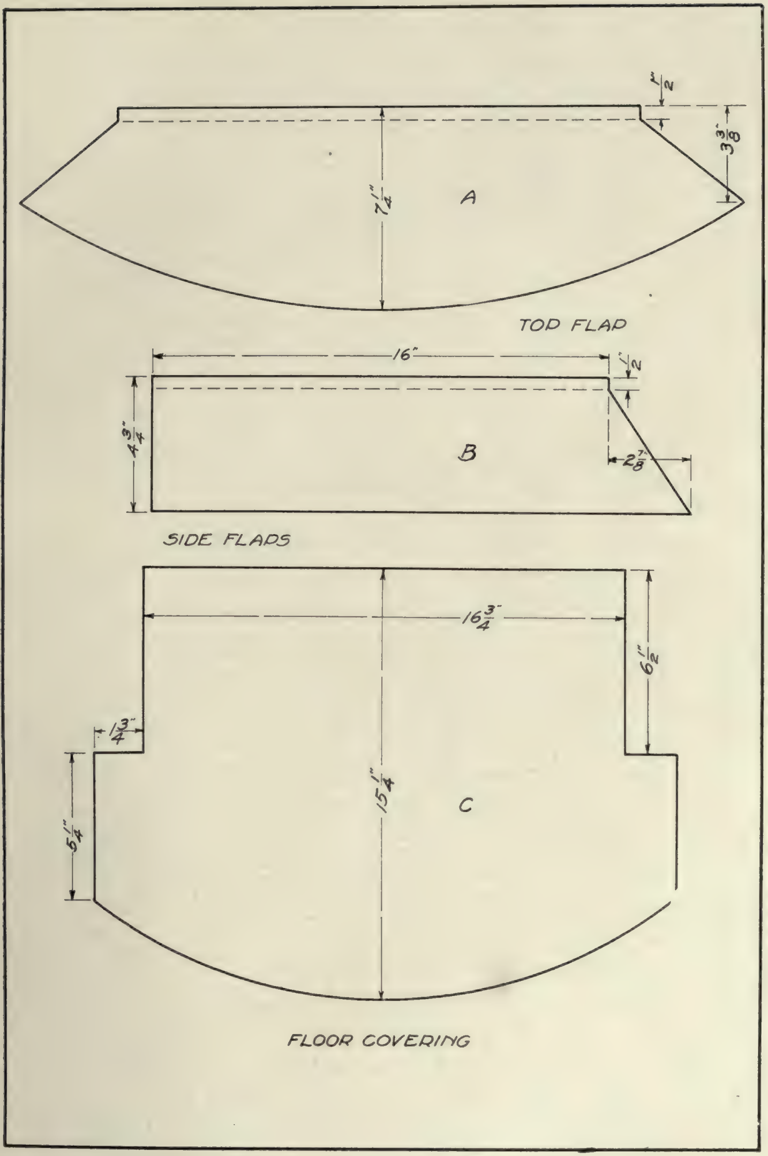


FIG. 1.



1/2"
3 3/8"
7 1/4"
A
TOP FLAP
16"
1/2"
4 3/4"
B
2 7/8"
SIDE FLAPS
16 3/4"
6 1/2"
1 3/4"
5 1/4"
15 1/4"
C
FLOOR COVERING

FIG. 2.

Now the picture is much more interesting if the bears are in it. This gives an opportunity for the study of animals. How does the bear differ from a cat, a dog, or lion? Note the large pointed head, short legs, and big heavy, shaggy body. What is the color of the bear? In the story are all the bears the same size? Another landscape could be tried showing the three bears just leaving their house in the woods. After a sufficient number of lessons are given to make the story clear—begin the making of a few things.

For the theater itself any ordinary wooden box might be used or even made. The one used for this special problem was a soap box, 17½″ long, 14″ high, and 7″ deep. The constructive problems in this article will be given in accordance with these measurements.

The box, as shown, is turned on one of its long sides, so that the opening, or front, of the theater is 17½″ long and 14″ high. The first thing to do to make this look like a real theater is to evolve the scenery at the back of the stage. For this story a landscape of colored paper was pasted upon the back of the inside of the box. This consisted of green foreground, blue sky, and distant purple mountains. The proportions of sky, ground, etc., could of course be as desired. Here very little sky and low line of mountains was shown so as to give distance to the scenery. Next a platform was built to bring the stage itself forward and outside of the box. A board extending 6″ out beyond the front of the box was fastened to the box by cleats. The box being 7″ deep with 6″ added gave a good stage floor space of 13″.

The curtain was the second thing to work out. And the fun of the whole problem was to see the curtain rise and fall, just like a real curtain at any theater. How many surprises that curtain can reveal! A wooden brace 3¼″ long and ¾″ wide was fastened on each side of the box near the top. See A and B, Fig. 1. One end of the brace extends about 1⅛″ beyond the front of the box. Near this end is bored a hole ⅜″ in diameter. Thru the holes in each brace is drawn a rod of ¼″ diameter, 21″ long. On the right end might be fastened a spool to make it easier to turn the rod, when raising or lowering the curtain.

For the curtain a piece of green book linen was used, 16¾″ wide and 16½″ long. This latter measurement allows ¾″ to turn up for a hem. The curtain was tacked on the rod with small tacks, just as any curtain is attached. For decoration, a border design of trees was made, see C, Fig. 1. This gave an opportunity to apply nature lessons

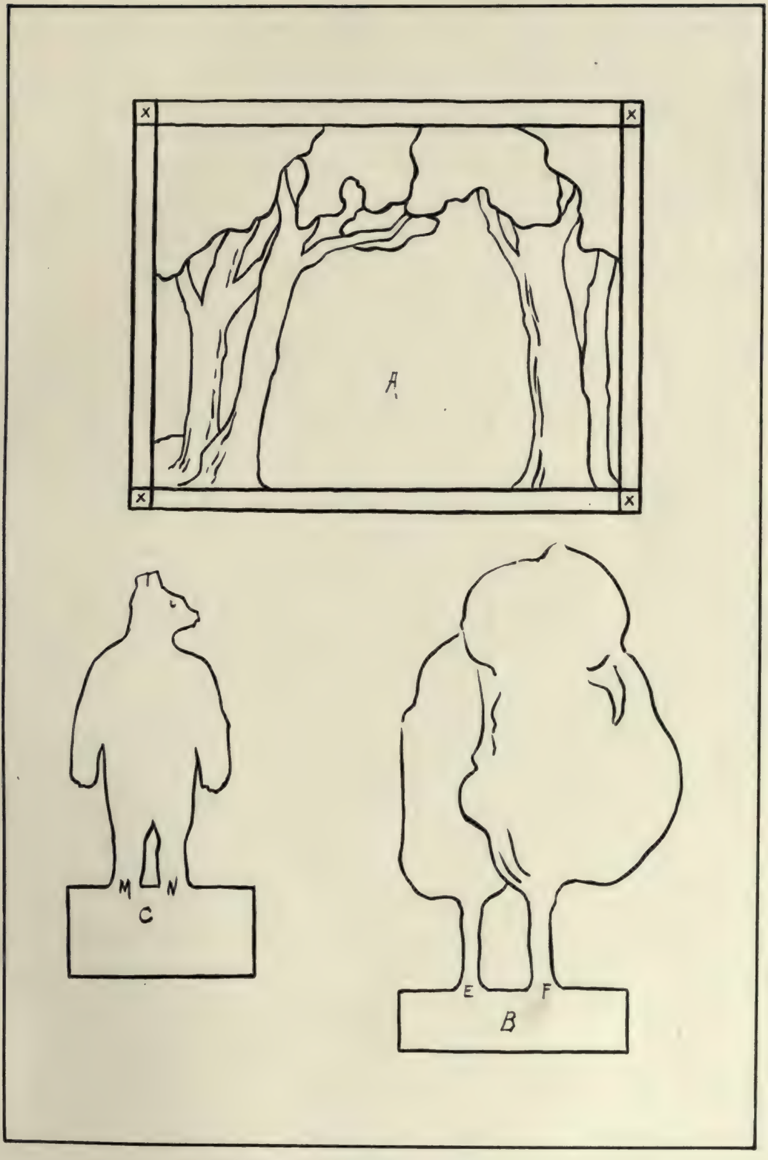


FIG. 3.

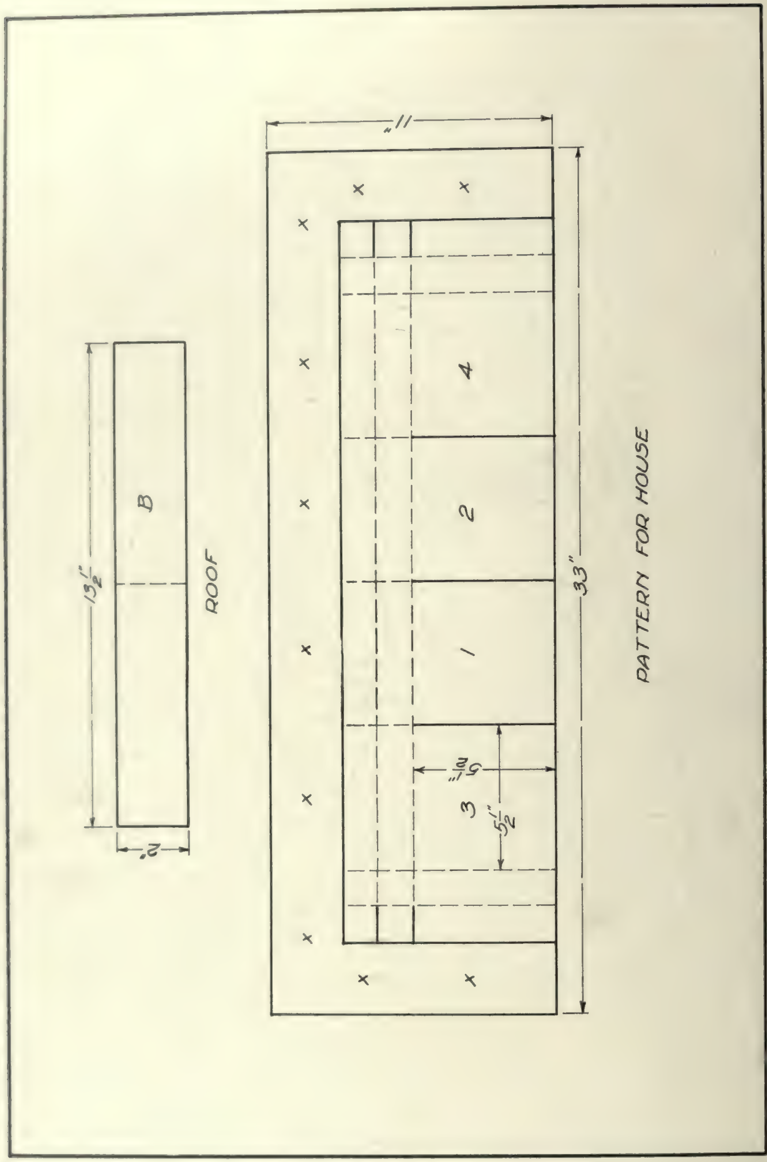


FIG. 4.

to design. The trees were made of dark colored book linen and pasted on the curtain.

In order to hide the box and make a larger stage, two large pieces of dark green paper, forming wings, were cut out, see B, Fig. 2. These were fastened one to each side of the box. Another piece, A, Fig. 2, was cut and fastened to the top of the box. These wings slant out and give distance to the stage. A paper of the same color was fitted to cover the floor of the theater, and this extends as far forward as is desired, C, Fig. 2.

PLANNING THE SCENERY.

In planning the staging of the story of "The Three Bears," three acts were decided upon:

I. Woodland scene—home of the bears. Three bears leaving the house for a walk.

II. The dining-room—the table set, and three chairs ready for the bears.

III. The bed-room—the beds, and Golden Hair asleep on the wee bear's bed.

For the larger scenery of the stage, pictures of woodland trees were made and then reduced to simple poster style, A, Fig. 3. The size of paper used was a little larger than the opening of the box, or 18½″ x 15″. This allows ½″ on each side, also top and bottom, to fold back and fit the scenery into the opening. As noted here, the corners marked "X" are to be cut out. When finished the scenery should fit easily into the opening of the box or be 17½″ x 14″.

Single trees with standards were made to fill in the stage and give the appearance of woods. These were made small to give distance to the scenery. The size of paper used for these trees was 9″ x 4″, see B, Fig. 3. The standard bent backward on line E-F is 3½″ x 1¾″. The standard is included in the measurement 9″ x 4″. A heavy weight of green cover paper was used. Colored crayon or water color wash of purple was added for trunks of trees.

Next came the making of the bears' house, Fig. 4. A heavy piece of brown cover paper was used, 33″ x 11″. As will be seen from the pattern, Fig. 4, the paper is divided or folded into 12 squares of 5½″ each. The parts marked "X" are to be cut off. Dash lines indicate folds, and heavy lines are to be cut. The remaining half of the upper

FIG.5. THE THEATER: WOODLAND SCENE.

squares is folded as shown by long dash lines. Also the lower right and lower left half square. As shown in drawing, fold 1 upon 2, and paste; then 3 upon 4, and paste. A piece of red cover paper, 13½″ x 3″, is pasted on top of the brown house for the roof. Fold on dotted line, which fits on ridge of house. See B, Fig. 4.

Surely the "Three Bears" must appear upon the scene. They were made from brown paper, three sizes of paper being used. The large bear was 5″ tall, with standard added of 1¼″ x 2¾″; C, Fig. 3. The medium sized bear was 4¾″ tall, with standard of 1¼″ x 2¾″ added. The small bear was 3¼″ tall, with standard 1¼ x 2 inches. The standard of the bear is folded back on the line M-N.

THE DINING-ROOM.

The Second Act presents the dining-room, with table set ready for the return of the bears. The pattern for the room is shown in Fig. 6. Heavy brown paper was also used for this room, size 25″ x 19½″. In this drawing mark off ¼″ from the bottom of the paper. This is to be bent backward for the standard of the walls of the room. Divide the paper into two unequal parts 12¾″ and 6½″ by a horizontal fold. The fold is 12¾″ above the first ¼″ fold. Divide this part 12¾″ high into three vertical oblongs, two of 7¾″ wide, and the center oblong of 9½″ wide. Oblong D is the back of the room; C and E are the sides of the room; G is the ceiling. After cutting A from G as indicated by heavy line, move A over to dash line, or fold at B and paste. Repeat same process at F and H. The corners of paper, as marked "X", are to be cut off. For the color scheme of the room any colored paper to suit a given color scheme could be used, also any furnishings that would fit the story. A mantle-piece could be fitted into the space D. Windows or doors are drawn or cut in sides C and E.

For the furniture brown paper was used. For patterns see Fig. 7. The dining-room table was made from a 12″ square; the table-cloth of white tissue paper; the doilies of circles of white tissue paper fringed. The plates were circles of heavy manila paper, as were the bowls. Three different sizes of doilies, plates, and bowls were made. The bowls were made by drawing one circle within another, the space between circles being the depth of the bowl. The inside of the smaller circle was cut out. A separate circle the size of this one just cut out was cut with four flaps added. This was pasted into the bowl to form the

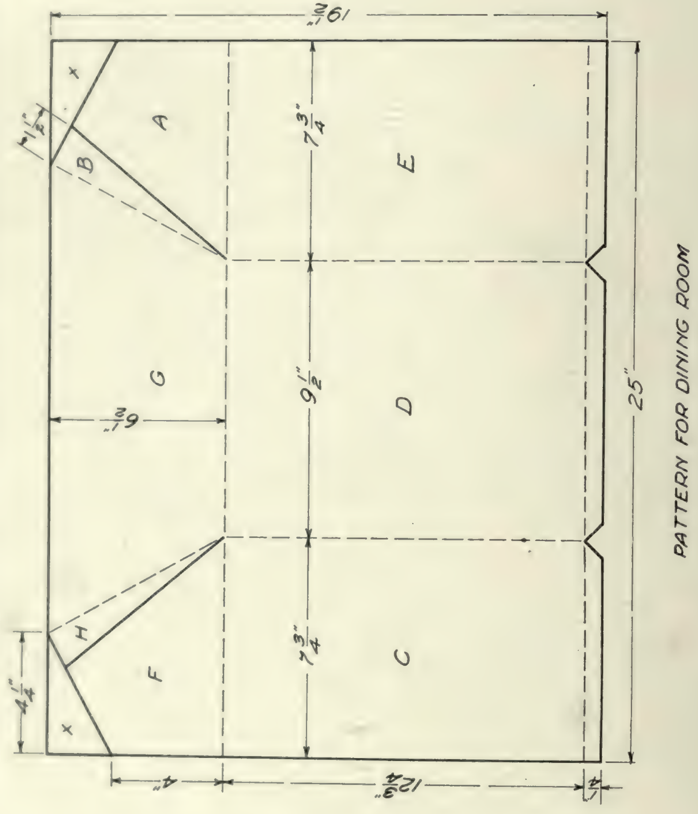

19½"
1½"
A
B
E
G
6½"
9½"
D
7¾"
7¾"
H
F
C
4¼"
25"
4"
12¾"
¼"
PATTERN FOR DINING ROOM

FIG. 6.

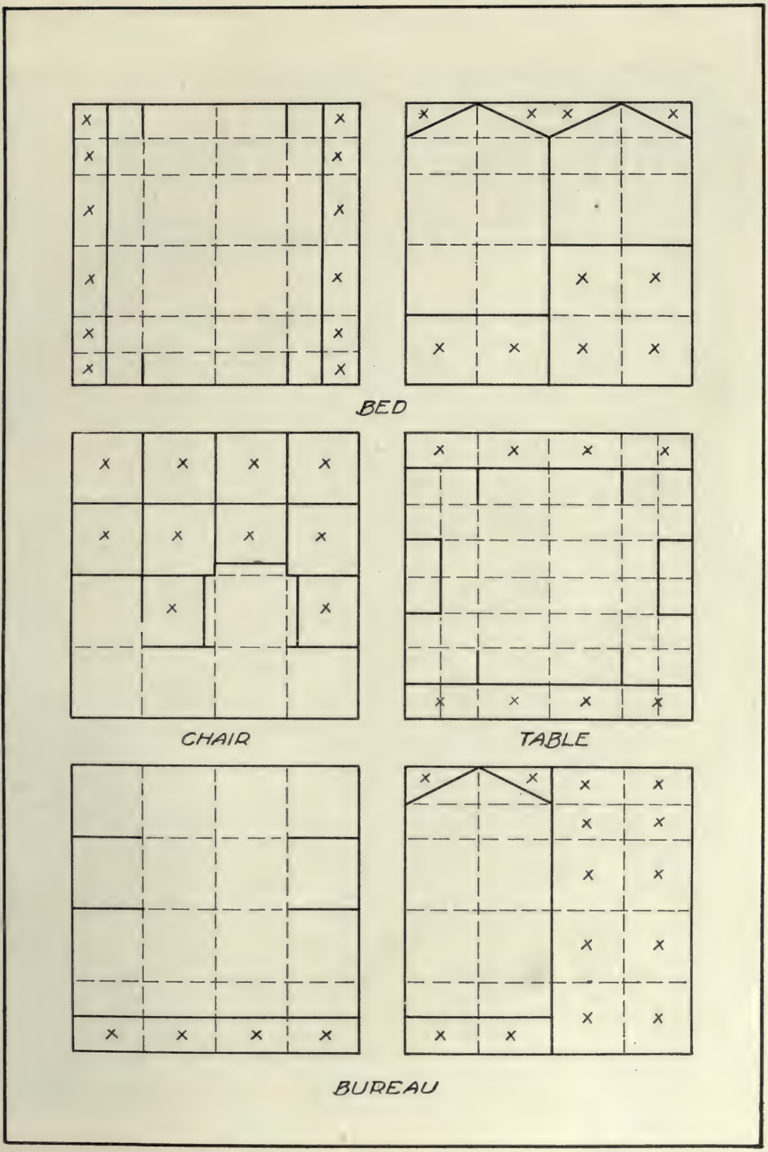


FIG. 7.

FIG. 8. THE THEATER: DINING-ROOM SCENE.

FIG. 9. THE THEATER: BED-ROOM SCENE.

bottom. A section nearly a quarter is cut out of the side of the two circles—so when this is pasted together the bowl flares out and is round.

The size paper for the chairs—for the big bear, medium bear, and little bear was 9″, 6″, and 4″, respectively. A rug can be made of paper to suit the color of the room.

The Third Act shows us the bed-room. The same pattern of room was used for this as the dining-room. This was worked out in soft blues and cream colors. A border of cream colored paper—a cut design —was worked out and pasted around the sides of the room near the ceiling.

The bureau, three beds, and chairs were made out of medium weight manila paper; for patterns see Fig. 7. Windows were drawn on sides of room, C and E, 4½″ x 2½″ about 2″ from the floor. The bed-room rug was made of cream paper with blue border of paper pasted on it. The rug was finished at both ends; that is, the paper was snipped. The size of paper for the furniture was as follows: Large bed, a 6″ square; medium bed, a 5″ square; small bed, a 4″ square; the bureau, 7″ square. Tin-foil was used for the looking glass of the bureau. Bed spreads and pillows were made of white tissue paper.

Of course the story would not be complete without Golden Hair. This doll was a real paper doll, the size of paper used being 2¾″ x 1¾″. Therefore, when the curtain rolls up for the Third Act, great is the delight of the children to see Golden Hair fast asleep on the wee bear's bed. And the window is right by the side of the bed, thru which in imagination the child sees Golden Hair jump—then breathes a sigh of contentment as he knows she goes safely home to her mother!

Many other stories lend themselves to the enchantment of the theater, as Red Riding Hood, Cinderella, The Ugly Duckling, and others.

THE COST OF MATERIALS FOR MANUAL TRAINING IN THE ELEMENTARY GRADES.

Leon F. A. Hein.

THE cost of maintaining manual training is necessarily an important factor. Where manual training is taught, the per capita cost of maintainance can be readily ascertained, but even after this cost has been found it is often of practical value to the supervisor to know how this amount compares with the average cost of maintaining similar work in other cities. Questions which may come to him are "Does manual training cost too much in my school—more than in other schools?" "Have the schools which are recognized as successful schools low-cost courses?" "If I introduce desirable but more costly problems, will the cost be more than is usual for this work?" Perhaps other questions along this same line of thought will suggest themselves. Again, when manual training is desired in the course of study, as a new subject, one of the important questions before the superintendent and especially the school board is, "What will it cost to keep up this course after it has been established?"

Up to the present time it is believed that such questions could be answered only by direct communication with the various schools. Believing that data on the cost of the materials used in the several manual arts subjects, collected from various cities thruout the country, would be of help to the profession, I have undertaken an investigation of this problem in connection with my work at Bradley Polytechnic Institute.

In order to get costs which might be termed representative, forty-one letters were sent to supervisors in fifteen states and the District of Columbia. The states to which these letters were sent, and the number of letters to each follows:

Colorado	1	Massachusetts	2	New York	2	Washington, D. C.	1
Illinois	11	Michigan	3	Ohio	4	Wisconsin	5
Indiana	4	Minnesota	2	Pennsylvania	1	Washington	1
Iowa	1	New Jersey	1	Texas	2	Virginia	1

The data which I have been able to make use of was received from fourteen of the above mentioned states.

The blank sheets which were sent with the letters to the various supervisors upon which to record their data, were arranged in vertical and horizontal columns, Table I. This arrangement made it possible to get all questions together in very compact form, and as a result easy to handle. Chance for error or misunderstanding was thereby eliminated and each item kept separate. All doubtful material was excluded.

DATA ON THE COST OF MAINTAINING MANUAL TRAINING.

TABLE I.

	GRADES	DRAWING	WOODWORK	COOKING	SEWING	ELEMENTARY HANDWORK
Time Devoted to Each	5-6					
	1-4					
	7-8					
In Which Grades Taught	1-4					
	5-6					
	7-8					
Number of Pupils	1-4					
	5-6					
	7-8					
Cost of Materials	1-4					
	5-6					
	7-8					

NOTE:—If you cannot give details, give summaries. Perhaps you can give costs per capita.

TABLE II.

WOODWORK

	Cost Per Capita	Grade	Time Per Week	Cost Per Capita Reduced to 1½ Hours Per Week	Taught in Grades	Number of Pupils
Boston, Mass.	$ .72		2:00	$ .54	6, 7, 8	13,658
		5, 6	1:00			
St. Paul, Minn.....	.47	7, 8	1:30	.49	5, 6, 7, 8	4,700
		5, 6	1:00			
Columbus, Ohio ...	.48	7, 8	1:30	.58	5, 6, 7, 8	4,193
Seattle, Wash.	.50		1:15	.60	6, 7, 8	3,912
		5, 6	1:00			
Newark, N. J......	.58	7, 8	1:30	.70	5, 6, 7, 8	3,700*
Washington, D. C..	1.34		1:30	1.34	7, 8	3,574
Buffalo, N. Y......	1.65		1:30	1.65	7, 8	3,000
		5	1:00			
		6	2:00			
Grand Rapids, Mich.	1.82	7, 8	2:15	1.35	5, 6, 7, 8	2,235
		7	1:30			
Springfield, Mass...	.68	8	1:00	.86	7, 8	1,915
El Paso, Texas.....	1.29		1:30	1.29	5, 6, 7, 8	775
		5, 6	1:00			
		7	1:30			
Madison, Wis.	.26	8	2:15	.25	5, 6, 7, 8	690
		5, 6	1:00			
Quincy, Ill.	.98	7, 8	1:30	1.09	5, 6, 7, 8	633
Oak Park, Ill.	.75		3:00	.38	7, 8	350
Rock Island, Ill. ..	.18		1:30	.18	7, 8	273
Bloomington, Ill. ...	.30		1:15	.36	7, 8	200
Evansville, Ind. ...	.75		1:30	.75	8	190
Ironwood, Mich. ...	.24		3:00	.12	7, 8	106
			Average	.75		44,104

*Estimated.

TABLE III.

WOODWORK FOR THE SEVENTH AND EIGHTH GRADES ONLY

	Cost Per Capita	Grade	Time Per Week	Cost Per Capita Reduced to 1½ Hours Per Week	Taught in Grades	Number of Pupils
Boston, Mass.	$ .80		2:00	.60	7, 8	8,656
Newark, N. J.	.85		1:30	.85	7, 8	3,700
Washington, D. C..	1.34		1:30	1.34	7, 8	3,571
Buffalo, N. Y.	1.65		1:30	1.65	7, 8	3,000
Saint Paul, Minn...	.66		1:30	.66	7, 8	2,000
		7	1:30			
Springfield, Mass...	.68	8	1:00	.86	7, 8	1,915
Grand Rapids, Mich.	2.38		2:15	1.54	7, 8	911
Oak Park, Ill.	.75		3:00	.38	7, 8	350
Quincy, Ill.	1.50		1:30	1.50	7, 8	300
Rock Island, Ill.....	.18		1:30	.18	7, 8	273
Bloomington, Ill. ..	.30		1:15	.36	7, 8	200
Ironwood, Mich. ...	.24		3:00	.12	7, 8	106
			Average	.84		24,985

TABLE IV.

COOKING

	Cost Per Capita	Grade	Time Per Week	Cost Per Capita Reduced to 1½ Hours Per Week	Taught in Grades	Number of Pupils
Cleveland, O.	$ .80		1:30	$ .80	7, 8	5,000
Washington, D. C...	.45		1:30	.45	7, 8	4,455
Buffalo, N. Y.	.67		1:30	.67	8	3,000
Columbus, O.	.72		1:30	.72	7, 8	1,625
Seattle, Wash.	.50		1:15	.60	8	1,313
Grand Rapids, Mich.	1.20		2:15	.80	7, 8	977
Madison, Wis.	.49		1:00	.74	7, 8	377
Quincy, Ill.	.95		1:30	.95	7, 8	306
El Paso, Tex.	1.20		1:30	1.20	5, 6, 8	250
Ironwood, Mich. ...	1.14		3:00	.57	7, 8	173
Newark, N. J.	.90		1:30	.90	7, 8	
			Average	.76		17,476

TABLE V.

SEWING

	Cost Per Capita	Grade	Time Per Week	Cost Per Capita Reduced to 1½ Hours Per Week	Taught in Grades	Number of Pupils
Washington, D. C..	$ .12½	3 4, 5 6	0:45 1:60 1:30	$ .18	3, 4, 5, 6	19,343
Cleveland, O.	.45		1:00	.68	5, 6	7,000
Buffalo, N. Y.	.50	5, 6 7, 8	1:00 1:30	.60	5, 6, 7, 8	6,000
Seattle, Wash.	.56		1:15	.67	6, 7, 8	4,210
Saint Paul, Minn...	*		1:00		5, 6	3,300
Columbus, O.	.30	5 6	0:45 1:00	.53	5, 6	2,525
Springfield, Mass....	*		1:00		5, 6, 8	1,650
Grand Rapids, Mich.	.12	5 6	1:00 2:00	.12	5, 6	1,216
El Paso, Texas	.04	6, 7 4, 5	1:30 1:00	.05	4, 5, 6, 7	800
Madison, Wis.	*		1:00		5, 6	328
Quincy, Ill.	.07		1:00	.10	5, 6	327
Evansville, Ind.	.25		1:30	.25	8	210
Ironwood, Mich. ...	.80		3:00	.40	5, 6	200
Newark, N. J.	.25	5, 6 7, 8	1:00 1:30	.30	5, 6, 7, 8	
			Average	.35		47,109

*Furnished by Student.

Table VI.

ELEMENTARY HANDWORK

	Cost Per Capita	Grade	Time Per Week	Cost Per Capita Reduced to 1½ Hours Per Week	Taught in Grades	Number of Pupils
Boston, Mass.	$ .21	2, 3 4, 5	0:30 2:00	$ .25	2-5	32,317
Seattle, Wash.	.10		1:00	.15	1-5	19,328
Saint Paul, Minn...	.10		1:00	.15	1-4	15,000
Buffalo, N. Y.	.08		1:30	.08	1-6	12,000
Springfield, Mass...	.15		1:00	.23	1-4	5,900
El Paso, Texas	.23		2:00	.17	1-4	3,500
Allegheny, Pa.	.10		0:30	.30	1-3	2,507
Rock Island, Ill.....	.02				1-6	2,351
Newark, N. J.	.10		1:00	.15	1-4	
			Average	.19		92,903

CONCLUSIONS.

The data compared shows a rather wide range in cost especially in woodwork. Here the cost ranges from 12 cents, the lowest, to $1.65 the highest. The average of the entire number is 75 cents. A grouping of costs will here probably be interesting (similar grouping will also be made in the other subjects): of the number seventeen, eleven figure at or below the average cost, while but one comes between 75 cents and $1 the other five being above $1.

The reason for this variation in costs lies in the kind of models or problems with which the pupils work. It is probable, however, that where the very low costs are shown the lumber fees returned by the pupils have been deducted. It should be kept in mind that the figures presented do not include salaries of teachers.

TABLE VII.

DRAWING

	Cost Per Capita	Grade	Time Per Week	Cost Per Capita Reduced to 1½ Hours Per Week	Taught in Grades	Number of Pupils
		1, 3	1:40			
Boston, Mass.	$ .08	4-8	1:30	$ .08	1-8	79,776
		1-6	1:00			
Saint Paul, Minn...	†	7, 8	1:30		1-8	24,000
Buffalo, N. Y.	.17		1:30	.17	1-8	24,000
		1-4	1:15			
		5, 6	1:40			
Columbus, O.	.10	7, 8	1.00	.12	1-8	20 297
Springfield, Mass...	.20		1:30	.20	7, 8*	1,915‡
		1-4	1:30			
Madison, Wis.	.08	5-8	1:40	.08	1-8	2,566
Ironwood, Mich....	.10		1:30	.10	7, 8	171
			Average	.12		152,725

† Furnished by Students.

* Also taught in first six grades but cost data as it was given could not be used here.

‡ Total in eight Grades 10,165.

Because of the fact of variations in cost per capita where the sixth, or fifth and sixth grades are included a separate sheet has been prepared supplementary to the main woodworking tables, and includes only costs per capita for the seventh and eighth grades, Table III. Only those were selected which had definite data given for these grades. In this way, it was possible to reduce all costs more definitely on the 1½ hour time basis and reach more accurate results for these grades. This grouping, which eliminates the fifth and sixth grade costs, shows the average cost per capita for the seventh and eighth grades in woodwork to be 84 cents.

Table IV shows that in cooking the costs range from 45 cents to $1.20, the average cost per capita being 76 cents.

In sewing, Table V, the cost ranges from nothing, at several places where the pupils furnish their own materials, to 68 cents. The average cost per capita is 35 cents.

In elementary handwork, Table VI, the highest cost is 30 cents, and the lowest 8 cents; the average cost per capita being 19 cents.

In drawing, Table VII, the highest cost is 20 cents, the lowest 8 cents. At one school the pupils furnish their own materials. Very few reported for drawing, several stating that records for this subject were not kept.

The result of my investigations shows the average cost of woodwork to be 84 cents per capita; drawing, 12 cents; cooking, 76 cents; sewing, 35 cents; and elementary handwork, 19 cents.

From the data received five tables have been prepared, one each for drawing, woodwork, cooking, sewing, elementary handwork. These include all information regarding the cost per capita, time per week, grades taught in, number of pupils, and also the cost per capita figured at the uniform time of 1½ hours per week.

The time per week, which these subjects occupy at the various schools is not in all cases the same. The reports, however, show that a majority prefer 1½ hours for this work, excepting elementary handwork, the average time of which is somewhat less. For this reason the costs per capita were all reduced to 1½ hours per week to get accurate comparative results at the most popular time.

Another difference to be noted in this particular is that of the grade groupings for woodwork and elementary handwork. In some, the fifth and sixth grades are included under elementary handwork while in others these same grades have woodwork in shops. The result of this is that where these grades are given shopwork in wood the average cost per capita for that course is lower. The raising of the cost per capita is not so noticeable where these grades are included under elementary handwork.

In figuring these costs the materials actually used including the waste were added together. This cost does not all, however, fall upon the schools as many get most of the cost back by having the pupils pay for the material used in the articles taken home.

HOW FORESTRY CAN HELP THE MANUAL TRAINING TEACHER.

EDWIN R. JACKSON.

MANUAL training contributes in two ways to the solution of the educational problems which confront each individual. It gives power to do; and it gives an ability to appreciate what is done by others. An apprenticeship teaches the boy to do, but to do only one thing and that in a limited sphere. The trade schools emphasize the power to do and minimize the second element,—the ability to appreciate what is done by others. It seems to me, however, that this latter element should be given chief place in shaping the course in manual training. It should be the object of the manual training teacher not only to give the pupil the benefit of first-hand experience, but he should also direct and revise this according to the experience of others. In order to profit by the experience of others, the student must be familiar with the industrial processes which are in daily operation in the world about him. These industrial processes are so important that one who is not fairly familiar with them can hardly be said to be educated. The natural question, when one comes across a new product of man's ingenuity, is "How is this made?" There is considerable satisfaction in being able to answer this question out of one's own knowledge, or at least in being able to comprehend readily the processes of manufacture when they are explained to one.

It can readily be seen, then, that one important purpose of manual training is the civic, or social, development of the student. This it does, first, by making him better prepared to occupy a useful, productive place in the community; and second, by making the student feel his relation to and dependence upon other individuals and upon the community of which he is a part.

It is my purpose to attempt to point out some of the ways in which a knowledge of forestry can be useful to the teacher of manual training in his efforts to achieve these ends. First of all, it must be very apparent that much of the industrial life of the Nation is based upon the manufacture and utilization of the products of the forest. In the days of the pioneers, when the logs for building the cabin, the wood for fuel, the hickory sapling for the ax handle, and all the other wood that was

used in or about the home came directly from the forest that stood just beyond the clearing, the boy of the household knew all about the processes connected with getting out and manufacturing the wood of the forest, Fig. 1. Now, however, the timber used in the dwelling or in the

FIG. 1. "PIT-SAWING"—PRIMITIVE LUMBERING.

school house may come from a dozen different sources, some of them hundreds or thousands of miles away. Each board and each shingle has a different story as to its transportation and manufacture. So here is an opportunity and a duty which the teacher of woodworking should not overlook,—the chance to consider the sources and distribution of the raw materials upon which the students are working and the place that these materials play in the industrial and economic life of the Nation. There is another lesson which should be brought out in this connection. A vast army of people is engaged in the work of getting out and working up the products of the forest. Among the great occupations in which the people of the United States are engaged in a business way, lumbering ranks fourth. If the boy in the manual training shop can be made to catch a glimpse of the long, complicated industrial and economic problems which arise in this industry; can be made to feel that upon him has devolved the final act in a great process in which hundreds of his fellow men have been engaged, perhaps for years, then he will begin to feel his relation to society a little stronger and to realize that he occupies, even while yet in school, an important place in the social and economic fabric, and to appreciate his duties and his privileges as a citizen a little more clearly.

Here comes in the element which brings the student of manual training into closest touch with the forester. The prosperity of the

FIG. 2. "OUR REMAINING HARDWOOD FORESTS ARE CONFINED TO THE SOUTHERN APPALACHIAN REGION."

Nation is dependent to a large degree upon its forest resources. Waste of these resources is a civic wrong. This wrong it is the work of the forester to prevent by eliminating waste or carelessness in the management of the forest and in forest utilization. The wood user should be the first to feel the importance of right methods on the part of the wood producer. Whether it be by the practice of better methods of forest management, so as to provide for the continued growth of the forest and the production of a sustained yield; or by devising improved methods of manufacture, which guard against undue loss of material; or by the adoption of systems of preservative treatment of timbers, the forester's work is, above all, to safeguard the welfare of the Nation in so far as it depends upon the forest. With all these problems of forestry the manual training student should be familiar, not only because they are so important that ignorance of them would be inexcusable on the part of any well-informed citizen, but also because by becoming familiar with the aims and purposes of forestry, he will learn a lesson of civic betterment, which can not fail to impress upon his mind a duty he owes to his fellow men and the Nation.

HOW THESE LESSONS MAY BE TAUGHT.

It is easier to generalize on such subjects as this than it is to point out specifically how the lessons suggested may be imparted to the pupils. I cannot, of course, discuss in detail all the topics that might be considered, but I wish to point out some of the interesting stories and useful facts which forestry may add to a course in manual training.

In considering the relation which exists between the study of manual training and forestry we may begin with a study of the sources from which our supply of commercial timber is derived. Suppose the student is working on a piece of white oak or some other hardwood. It will be well to connect his manual training with a little geography by pointing out the fact that our present hardwood forests of commercial importance are confined practically to the Southern Appalachian region, Fig. 2. If he is using pine in his work, he will be interested in knowing the story of the vanishing white pine forests of Michigan and the other Lake States; or in learning that what the lumberman calls "yellow pine" may be one of several species of the Southern pines, probably the longleaf species. So we might study each species of wood which comes to the shop, tracing it back to the forest from which it came,—the Douglas fir to the dense forests of Washington or Oregon; the redwood to the sunny slopes of California; the cypress to the swampy flats of Louisiana or Georgia. All this will serve to bring to the mind of the student a sense of the dependency of each part of our great land upon every other part, and to prepare him for the next step—the study of the processes thru which the logs from the forest have gone, and the numerous hands thru which they have passed before reaching the school shop.

First there came the lumberman—perhaps the sturdy, roistering woodsman of the North, Fig. 3, with his double-bitted ax, or perhaps a dusky-skinned laborer of the Southland—who felled the tree and cut it up into logs. Then the haulers took it out to river or railroad. If the scene was in the North woods, probably the logs were piled high on sleds hauled by horses; if in the South where there is no snow, the logs were dragged out at the end of a cable wound up by a donkey engine or swung between a pair of high wheels. Then if a stream of water afforded an easy means to transportation to the sawmill, the "drivers" took charge of the logs, Fig. 4, guiding them down swift currents, risking life and limb continually in the effort to avoid a "jam" and to keep the logs in motion until they finally arrived at the mill pond or sorting

FIG. 3. THE STURDY, ROISTERING WOODSMEN OF THE NORTH.

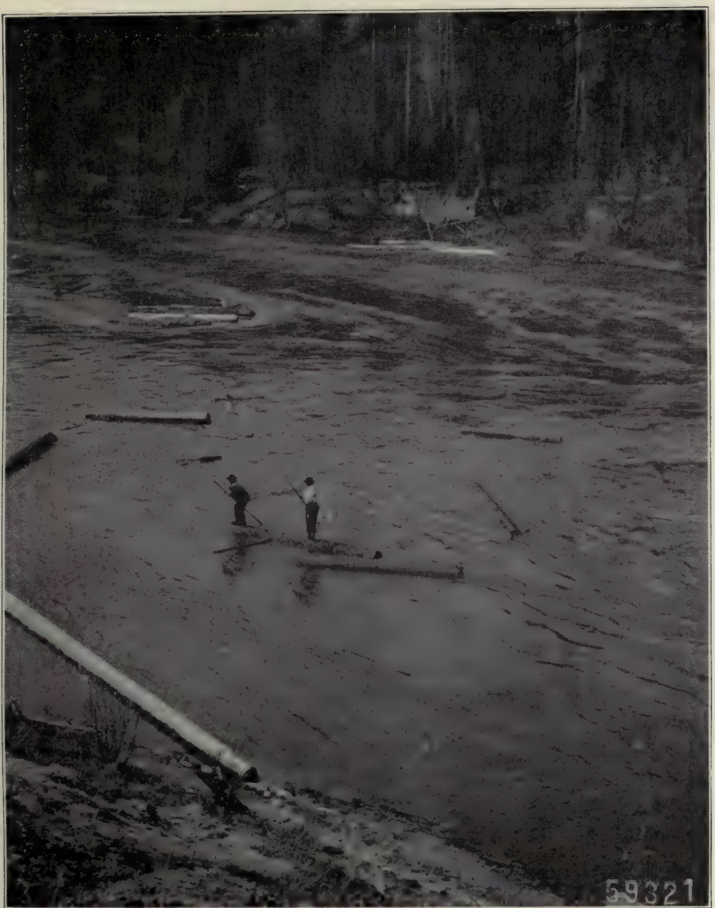


FIG. 4. RIVER MEN RIDING A LOG DOWN STREAM.

boom where they were sorted over, and stored until their turn at the saw came. If there was no river down which the logs could be floated to the mill, a railroad was built out to the forest, the logs were picked up by steam cranes, piled on flat cars and hauled by puffing engines to the mill yard or pond.

Then came the sawmill with its tearing saws, its buzzing, groaning edgers and planes, Fig. 5. The logs were fairly nipped asunder and what was "timber" became "lumber," ready for the builder or wood

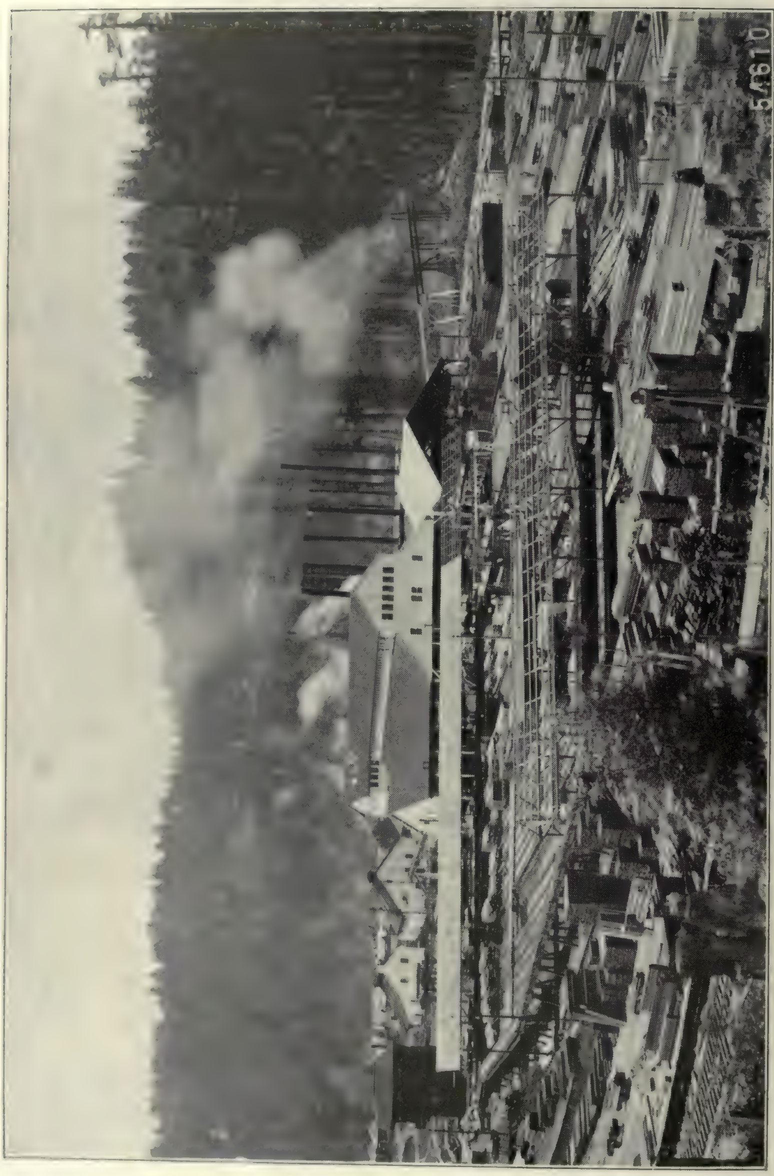


FIG. 5. THE SAWMILL WITH ITS TEARING SAWS.

FIG. 6. PART OF THE PRICE OF LUMBER MUST BE CHARGED TO FREIGHT.

worker. If the boards were still green, there was the dry kiln which seasoned them.

Leaving the mill, the lumber must be shipped to the wholesale or retail dealers in various parts of the country. The student will get a glimpse into one of the big economic problems of the Nation—that of transportation—if it is pointed out to him that when he buys a board, part of the price he pays is generally to be charged up to freight, Fig. 6. So it has happened that some of this lumber has at last found its way to the shop where the manual training student now waits the opportunity to shape it into table, bookcase, or some other useful article. The board, as it comes to his hand, is the product of the labor, the thought, and the skill of perhaps a dozen individuals in widely separated parts of the land.

ELIMINATION OF WASTE.

Thru all the processes of wood utilization, from the forest to the workshop there exists an element of waste. This should be eliminated, and it is part of the work of the forester to seek means of correcting this evil so far as may be. To begin with, there is waste in the forest itself, thru the fact that Nature is by no means a good forester. The forest, if left to its natural conditions, will never reach its best state. There will be spaces which are empty, which should be filled up with growing trees; there will be tracts on which the trees are over-crowded and in consequence grow but slowly and become liable, thru their weakened condition, to the attacks of their natural enemies. Then thousands of feet of lumber are estimated to be wasted each year because trees that are fully mature—ripe for cutting—are not utilized but left to occupy land which should be given over to younger, more rapidly growing trees. These and other bad conditions in the forest, the forester aims to correct by applying to the forest rational systems of silvicultural management.

Again, when the forest tree is left to its natural development it does not always produce the best grade of lumber, any more than corn, uncultivated, will produce large, faultless ears. The wood-worker wants lumber free from knots, decay, shakes, or other defects. So the forester aims, by keeping the trees crowded together in youth and gradually opening up the stand as the trees grow, to produce tall, straight, clean trunks; and by protection against fire, insects, and fungi, as far as

possible to prevent the trees from becoming defective. It is, of course, apparent, that because of the long time required to grow a crop of trees, it is not practicable to breed better types of lumber trees in a particular species or to produce new forms or hybrids of better quality, as is done with annual agricultural crops, such as corn or small grains. For his results in developing a desirable form of timber tree, the forester must rely chiefly upon his ability to manipulate the light supply by scientific cuttings in the forest.

When the tree has been cut and removed by one means or another to the sawmill the waste does not cease, by any means, Fig. 7. The manual training student cannot fail to be interested in the improved methods and machinery now being used to manufacture the log into lumber. First we may note the change in the style of saw which has taken place to a large extent of recent years. The circular buzz-saw which used to be universally used is giving way to the more practical and economical band-saw, which enables the millman to cut up larger logs and causes less waste in sawdust than if the circular saw is used. Of course, every manual training student will know the difference between quarter-sawed and plain sawed lumber, and the difference in the values of the two grades. They should be made to see that some of this difference in value is due to the greater loss due to waste resulting from quarter-sawing the log, and the consequently greater cost of production.

But we must not stop here. There is still another way in which the forester is brought into touch with the wood user, and that is thru the practice of preservative treatment of woods. Wooden structures are not the most durable to be had. Beams, ties, posts or other wooden elements of construction are soon more or less affected by decay. It is part of the work of the forester to discover and put into practice means of treating timbers with preservatives so as to prolong their periods of usefulness, Fig. 8, thus effecting a saving in the quantity of wood needed each year for construction and repair. The subject is one with which the manual training student ought to be more or less familiar, at least in a general way.

As I see it, then, the chief importance of forestry in its relation to manual training, lies in the opportunity it affords to awaken the student to a sense of his duty as a citizen to help in the great work of eliminating waste from our industrial world, to broaden his mind until he sees himself not alone but as a part of a great social system composed of

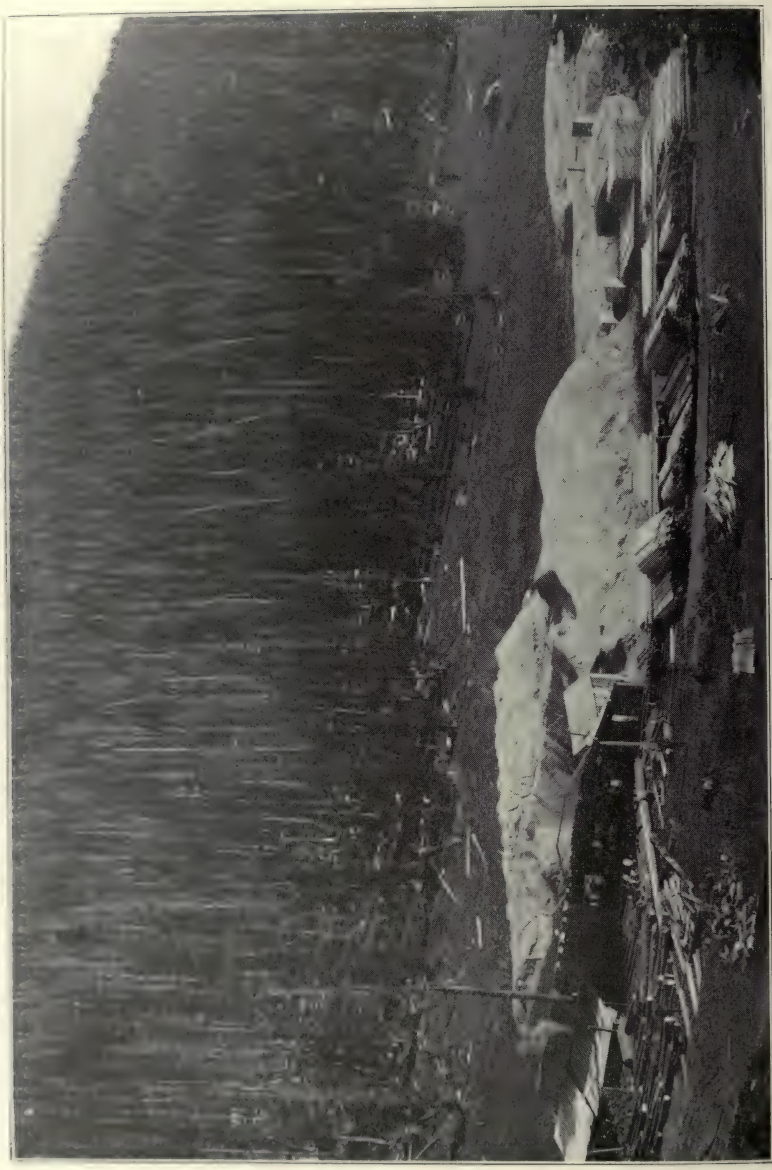


FIG. 7. THE SAWDUST PILE—WASTE OF THE MILL.

FIG. 8. TREATING POLES WITH PRESERVATIVE.

individuals like himself, but each one dependent upon the other. These are the lessons which, if rightly learned, will go farther than anything else toward the fulfilment of the real work of our public schools in preparing our boys for the greatest duty and the greatest privilege offered to the men of today—citizenship in a great republic.

SEAMED SILVER PITCHER
From Kalo Shop.

MANUAL TRAINING IN THE PRIMARY SCHOOLS OF VICTORIA, AUSTRALIA.

Howard R. Heath.

In Australia, as in England, America, and Europe, diversity of opinion seems to exist as to what should be the main object of handwork in the primary stages. Here, as there, we find one section of our teachers advocating the training, or educational side of the question, and another section putting forward the claims of the technical or vocational aspect.

But in the mind of the writer, it is emphatically the province of the primary school to work on broad, general, and educational principles, leaving the specializing and vocational development to the high and technical schools.

And I think this object should obtain more particularly in Australia with its scattered population made up largely of those engaged in agricultural, pastoral, and mining pursuits.

In the year 1901, as a result of a forward movement in education generally, it was decided that manual occupations should be added to the curriculum of the state (or primary) schools, and with this object in view, John Byatt, an English expert in the subject, was appointed the organizing inspector of this particular branch of work, and from that time to the present it has continued to spread steadily but surely, until it has become a free and compulsory subject wherever there are the conveniences for teaching it.

In the cities and large towns the center system is in vogue. In smaller country towns two or three places will have a teacher between them, and in the rural schools, if the teacher of the school is competent to do so, he is allowed to teach sloyd work as the manual occupation.

There are at present about thirty-five centers in Victoria, see Fig. 1, and in addition to these from fifty to sixty rural schools are receiving the instruction from the ordinary teacher.

As has been indicated, the system introduced by Mr. Byatt was the Swedish sloyd; but this has been rearranged and altered so as to be adapted to local needs and circumstances.

The course consists of the usual woodwork exercises which are included in about forty models, each of which is a useful article, see Fig. 2.

FIG. 1. INTERIOR OF THE SLOYD ROOM.

FIG. 2. THE TYPE MODELS OF THE SLOYD COURSE.

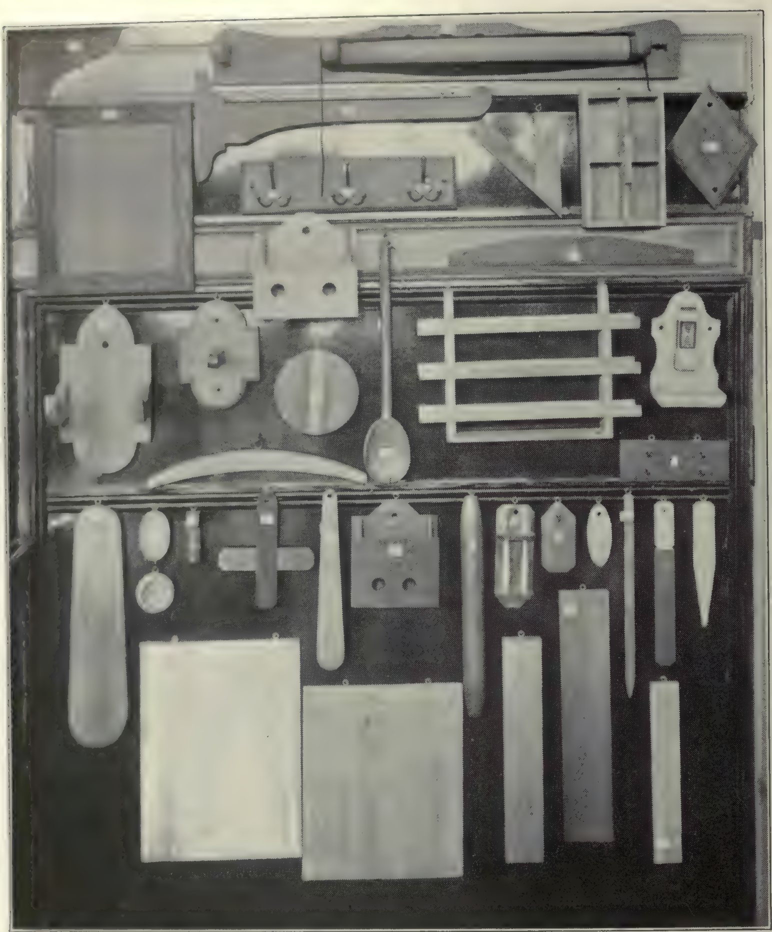


FIG. 3. SOME ALTERNATE MODELS.

The principles of orthographic and isometric projection are taught, and as a rule each article is drawn to scale before being made.

Lessons on timber (growth, seasoning, preserving, etc.) and the names, construction, and uses of all the tools used, make up the theoretical portion of the program.

Both teachers and scholars are encouraged by the Department to suggest and introduce new models, and as a result of this, we have at this center at least one alternative to each of the type models, Fig. 3, and a set of larger articles for advanced boys to make for their homes, Fig. 4.

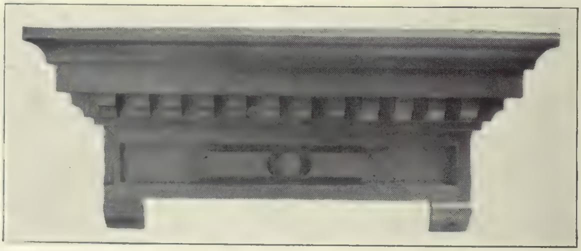
FIG. 4. A FEW ADVANCED MODELS.

In a number of cases these alternative and special articles are the outcome of suggestions made by the boys themselves.

In addition to the drawings made by the pupils, blue-prints are occasionally used. A great deal of difficulty has been experienced in giving the right amount of attention to instruction in the correct holding and manipulation of tools owing to the fact that no restraint is placed upon the smarter boys, and no effort is made to keep all the members of a class working at the same stage. At this center we have met the difficulty by arranging a very complete and thoro series of tool-drills.

In addition to his ordinary model each boy has a "practising piece," and ten minutes of every lesson are devoted to a tool-exercise on this piece, the whole class working together and the exercise being most carefully demonstrated and supervised by the teacher. There are four series of these drills during the year, one for each quarter. The "practising piece" gradually develops into a simple useful article by the end of the quarter, every boy having had definite class instruction in about twenty-five of the most general and oft-recurring tool exercises, and every member of the class making just what progress he is able with his ordinary models, without being retarded by the slower boys.

In conclusion it might be mentioned that the teachers employed in the primary course are certificated teachers who have received a course of training in manual work, it having been decided (and wisely) that at this primary educational stage, it is the influence of the teacher rather than that of the tradesman that is productive of the highest results in the boys' character and development.



SHEET-METAL WORK DONE BY BOYS IN STATE REFORMATORY, AT PONTIAC, ILLINOIS.

WRINKLING PROCESS AND TOOLS.

METALWORK WITH INEXPENSIVE EQUIPMENT FOR THE GRAMMAR AND HIGH SCHOOLS, X.[1]

ARTHUR F. PAYNE.

IN the December, 1911, issue instructions were given for "raising" bowls, etc., by the simplest method, that of beating into a hollow in a block. In the April, 1912, issue a description and illustrations were given of the method of raising pitchers, etc., by the "coursing" method. The first illustration of this article shows the two main points of the third method of raising, which is called the "wrinkling" method. This is the fastest method of raising any large and deep object, such as a vase, without seaming. This is a fast method but at the same time it requires considerable practice and a higher degree of skill than the other methods.

The first photograph shows a piece of work that has been "wrinkled" for the first hammering, with the hammer and the wrinkling block that

was used. The steps taken are as follows: Cut out a piece of metal (18 B-S gage) the size and shape required, and with the pencil compass mark a circle the size of the base. The illustration shows a circular piece of metal, but the method is the same for square or oval objects. Get a piece of hard wood, about 2″ x 2″ x 8″, and make a wrinkling block of it by filing a crease in the end, as shown in the photograph. Place the block in the vise and with the thin neck hammer shown beat the metal into the crease. There are two points to be careful of, the first one is to allow the metal to bend in freely when hammering the wrinkles, that is do not try to stretch the metal when driving it into the wrinkling block. The second point is, to be sure to have the wrinkles evenly spaced and straight. The next step is to beat down the wrinkles with a raising hammer, holding the piece of work upon a tee-stake the same as when "raising by coursing" as illustrated on page 319 in the April number. By looking closely at the right hand side of the piece of work shown in the first photograph it can be seen where the first course has been started. Care must be taken not to allow the wrinkles to fold over when beating them down as this would result in the metal cracking. When the metal gets hard and stiff soften it by "annealing" as described before.

UNFINISHED VASE NINE INCHES HIGH, RAISED BY THE "WRINKLING PROCESS."

The second photograph is of an unfinished vase, 9″ high, that was raised entirely by the "wrinkling process." It will be seen, however, that the coursing process will have to be used to carry it to completion.

The third and fourth photographs are of other vases raised into shape from a flat circular disk by the same methods.

The three kettles were raised into shape by the same methods, the patterns for the spouts and handles being drawn and laid out, in the manner described for hollow pitcher handles, and soldered on to the body with silver solder. The knobs on the covers are hollow, being part of the cover hammered out to form the knob.

Art metalwork divides itself into four large divisions, namely—flat work, such as the paper knife; bent and riveted work, such as the

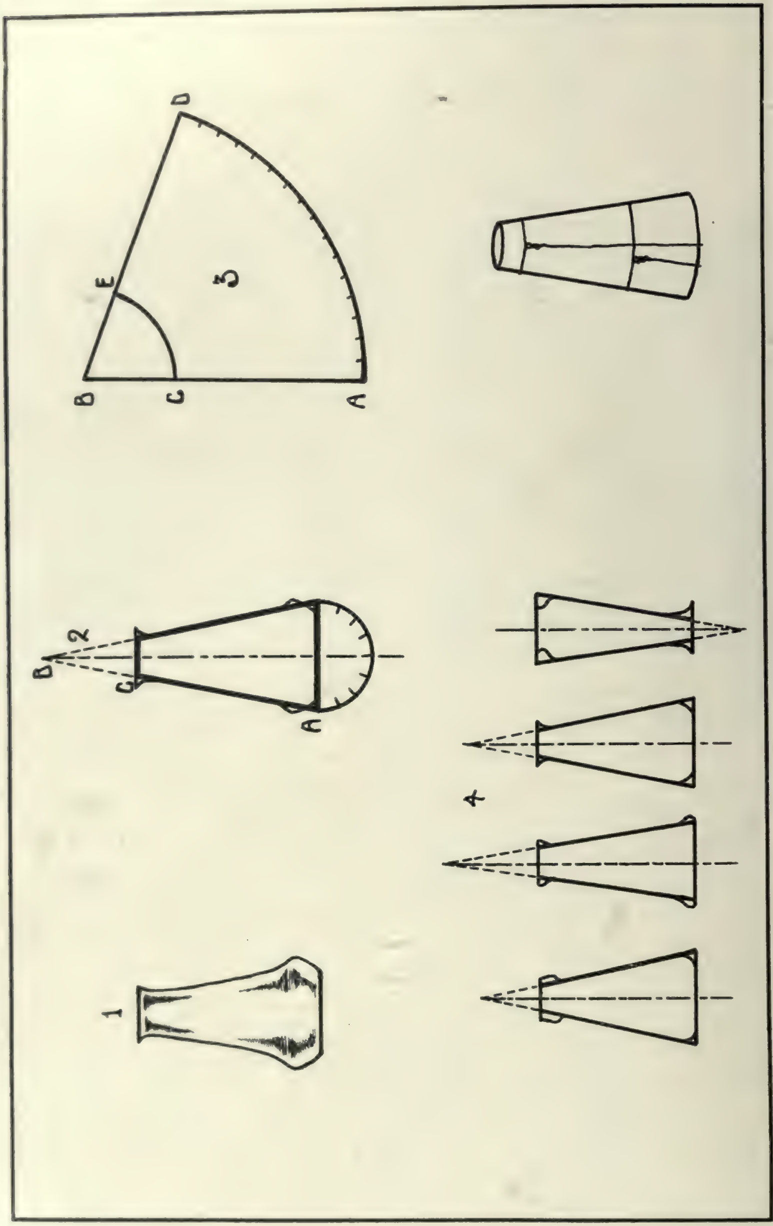
clock and the lantern; raised work, such as bowls and vases; seamed work, such as pitchers and vases that are not beaten up from a flat disk, but have a seam or joint that is soldered together with silver solder. It is this last division "seamed work" that we are now to deal with.

COPPER VASE RAISED FROM FLAT PIECE OF METAL.

COPPER VASE RAISED FROM FLAT PIECE OF METAL—UNFINISHED.

We will take the "seamed and fluted vase" for a description of the simplest kind of seamed work. It is first necessary to obtain a pattern that will, when it is cut out of metal and the seam soldered together, be the approximate size and form of the vase that we wish to make. The method of obtaining this pattern is shown in the accompanying sketches. We must first have an accurately drawn outline of the size and shape of the finished vase, as shown in the first sketch. It will be noticed that the vase approximates in shape the form of a cone. We can easily develop a pattern of a cone, so we proceed as tho the vase were a cone, as in sketch No. 2. It can readily be seen that if we can obtain a cone of metal the shape of the heavy lines, it will be a comparatively simple matter to hammer out the top and hammer in the bottom, to produce the form of the vase.

To obtain the pattern of the flat piece of metal that will roll up



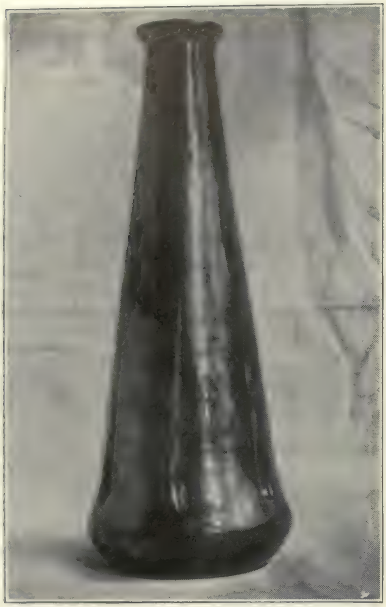
METHOD OF OBTAINING PATTERN FOR SEAMED AND FLUTED VASE.

into a cone of the desired shape and size, we proceed as follows:—extend the general lines of the vase in a straight line upward until they meet at B. In extending these lines we disregard any slight curves as may be seen in the sketch. The heavy lines show the cone that we wish to obtain. Draw a half circle the size of the base of the cone, and divide it into eight equal parts. Lay off the line A-B, as shown in 3, also the distance C-B. Draw an arc with A-B as the radius, and another with B-C as the radius. With the dividers carefully measure one of the eight equal parts of the half circle drawn at the base of 2, and lay off sixteen of them on the arc A-D, in 3. Where the sixteenth space ends draw the line D-B. The space enclosed by A-D, D-E, E-C, C-A, is the pattern that will roll up into the cone desired. Patterns may be developed in the same way for any vase or pitcher form. A few suggestions are given at 4.

KETTLE.

To make the vase, first cut a piece of metal (copper, brass, or silver) the size and shape of the pattern, and prepare the edges of the seam for soldering by striking them with a file, thus making them rough so that the solder will hold the seam firmly. Roll the metal so that the edges come together, being sure that they fit perfectly, and hold them in place by binding them together with soft iron wire in the manner shown in the sketch. The vase is now ready for soldering with silver solder by the method described in the April issue.

KETTLE AND TRAY.



SEAMED AND FLUTED VASE.

SEAMED SILVER PITCHER.
From Kalo Shop, Chicago.

After it is soldered and has been cleaned by "pickling" in the sulphuric acid solution, it should be made true and round with a mallet on a tee-stake, and the top should be hammered out and the bottom beaten in to conform to the outline desired. It will probably be necessary to soften it by "annealing" during this process; if so, care must be taken not to get the seam so hot that the solder will melt. After it has been brought to the desired shape, the bottom edge should be filed flat and a piece of metal the right size soldered on for the bottom.

The vase is now ready for "planishing." It would be rather difficult to planish a vase such as is illustrated by the method of planishing previously described in this series. In the first place, it would be no easy matter to find a tool that would go inside the vase and fit the various curves, and it would also be difficult to hold the vase on the tool in the proper position to do good planishing. We avoid these difficulties by filling the vase with pitch, allowing it to harden, and planishing on the pitch. The pitch mixture is made up of equal amounts of Burgundy pitch and plaster of Paris measured by bulk. The Burgundy pitch should be melted first in a common saucepan and the plaster of Paris stirred in slowly. Be careful that the pitch does not get afire. When

the pitch and plaster are thoroly mixed, pour into the vase and allow it to get hard. Then the vase may be planished, and if it is desired it may be fluted as shown in the photograph.

This fluting is done in the same manner and with the same tools as described for the process of "chasing" in the June, 1911, issue, the only difference being that the tool is a little thicker and blunter, and instead of being done on a board the fluting is done while the vase is full of pitch. If the fluting is to be rather deep it is advisable to do the work while the pitch is slightly warm.

SEAMED VASES.

After the vase is planished smooth the pitch may be melted out by tying some wire around it, suspending it bottom upwards and turning the flame from the blowpipe on the pitch at the mouth of the vase. Do not turn the flame on any part of the vase except where the pitch is exposed to the heat as it would be likely to explode if the pitch in the upper part got melted first and could not get out easily.

The silver pitcher was made by the seaming method, as described in this article excepting that it was planished on a stake, the mouth of the pitcher being wider than those of the vases. The handle of the pitcher

is made of thick flat silver bent and filed to shape. The wire around the mouth is half-round wire soldered on.

The writer of this series is often asked the commercial value of this kind of work. The answer to this question depends entirely upon the design, and the care with which the object is made and finished. A value is placed upon a piece that is of good design, well made, and carefully finished, in the same way that a value is placed upon a fine picture or any other work of art. It is not valued by weight of metal or the time it took to make it, but as a piece of art work. If a piece is of poor design, crudely made, and carelessly finished, it is worth nine cents a pound, because that is the market price of scrap copper and brass. The work used to illustrate this series is, with one or two exceptions, the work of students and it will give some idea of the commercial value of such work if the prices they were sold, or are held at, are known. The price of the first kettle shown was $35.00; of the seamed and fluted vase, $25.00; of the three seamed vases, $8.00, $12.00, and $18.00. But the commercial value of the work cannot be compared to the value gained by the student in recognizing and controlling the many factors that make for success—the new experiences and knowledge accumulated—the gain in appreciation and, best of all, the joy of creating.

(*To Be Continued.*)

KETTLE.

ROOMS IN PAPER.
PROBLEMS IN CONSTRUCTION AND DESIGN.[1]
IV.

NAMA A. LATHE AND ESTHER SZOLD.

TALL STAND.

ORDER OF CONSTRUCTION.

See Fig. 27, and Fig. 27A.

FOR drawing the wide curves provide a circle marker. This may be a narrow strip of strong heavy paper 15″ long.

Draw a line thru the middle, extending the entire length of the strip.

Mark a point on the line ¼″ from one end. Letter the point O.

Ten inches from O mark a point X.

Four and one-half inches farther from O mark a point Y.

Prick holes at X and Y to admit the insertion of a sharp pencil point.

FRAME.

See Fig. 27.

Paper:—7½″ x 16″.

Mark a point O half-way across the narrow width of the paper, and ½″ from one end.

Thrust a pin thru the circle marker at O. Hold the pin upright as a pivot on point O of the paper for the frame.

Thrust a pencil thru the circle marker at X and draw the arc X.

Similarly draw arc Y.

On arc X mark a point 1½″ from the edge of the paper. With the compasses set at a radius of 1″, begin at this point and lay off four 1″ spaces on arc X.

Draw lines connecting these points with O. Extend each to cross Y. Letter these radii A, B, C, D, and E.

Draw a straight line between the points where A and B cross X, also similar chords between B and C, C and D, D and E.

Draw similar chords along Y.

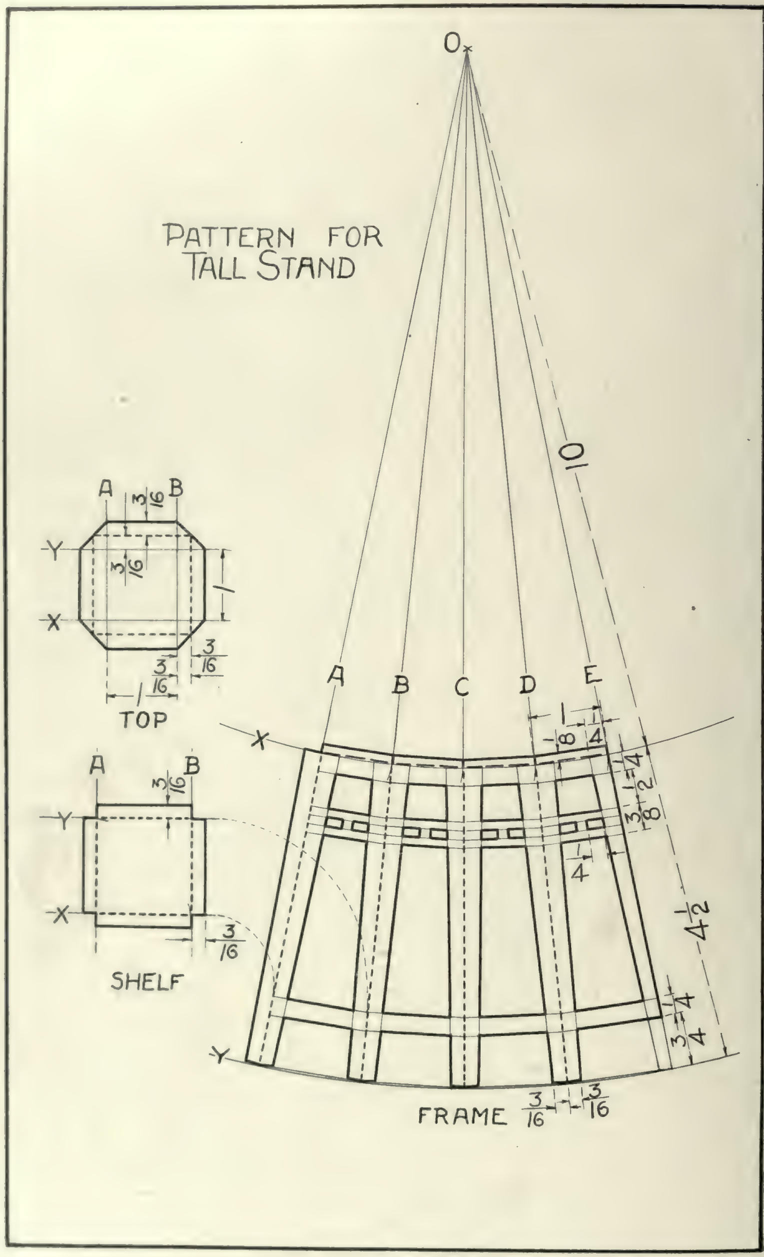


FIG. 27.

The placing of the braces gives opportunity for individual choice in design—so the braces may be drawn as chords along other arcs spaced as desired between X and Y. Or, points may be marked on each long radius by measurement.

In the more elaborate middle brace the arc lines may prove confusing.

Measure on the chords for the widths of the top and bottom of the legs. Draw the legs. Add pasting laps—see Fig. 27.

Shelf:—Construct lines A and X at right angles. Span the compasses between two of the radii at the upper edge of the lowest brace.

With the intersection of A and X as a center and with the brace span as a radius, swing short strokes across A and X to mark the location of B and Y.

The dotted arcs in the drawing (Fig. 27) denote only the relation of the shelf dimension to the brace. They are *not* construction lines.

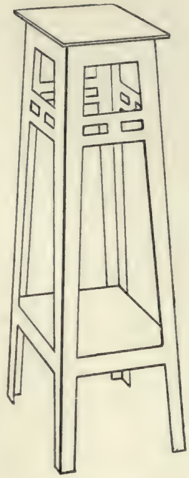


FIG. 27A.

Order of Pasting:—Paste the short side of the frame under the long leg of the opposite side.

Lay the square for the top flat, the laps turning upward. Turn the frame upside down on the top.

The square of the frame should fit the inner square on the top. The laps of the frame should spread outward.

Paste in position.

Paste the laps of the top down over the frame laps.

Spread glue on the inside of the lowest brace strips. Turn the stand right side up. Hold the shelf with the laps turning downward and push it into place from below.

ROUND DINING TABLE.

ORDER OF CONSTRUCTION.

See Figs. 28, 28A, and 28B.

Place and test main structural lines and add details.

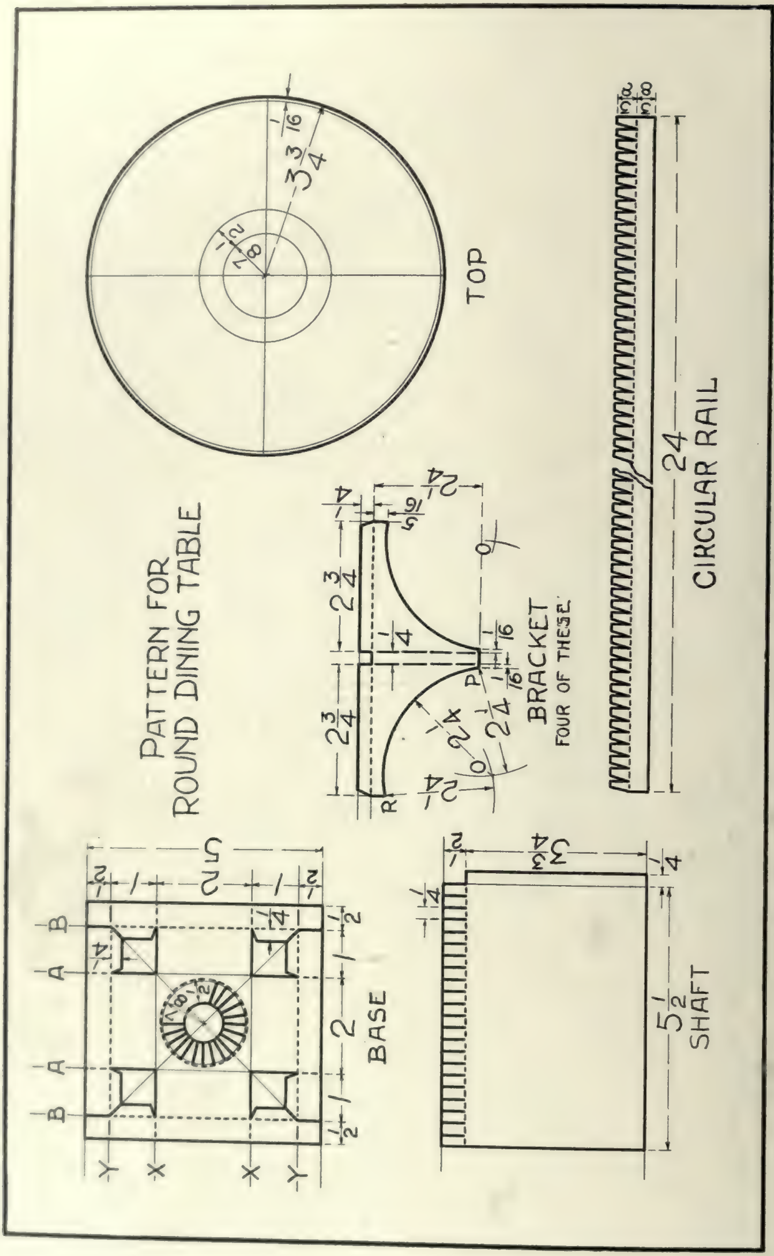

PATTERN FOR
ROUND DINING TABLE
TOP
BRACKET
FOUR OF THESE
CIRCULAR RAIL
BASE
SHAFT

FIG. 28.

SPECIAL FEATURES.

Brackets:—Four brackets will be needed.

These may be constructed on one piece of paper, using a continuation of either the horizontal or the vertical lines as a basis for all.

When the points R and P have been located, use these points as centers and with a radius of 2¼″ draw arcs to intersect. With their point of intersection as a center and with the same radius draw the arcs forming the curves of the bracket wings. These arcs will pass thru R and P. If preferred a freehand curve may be drawn and a paper pattern cut out and traced to make the curves uniform.

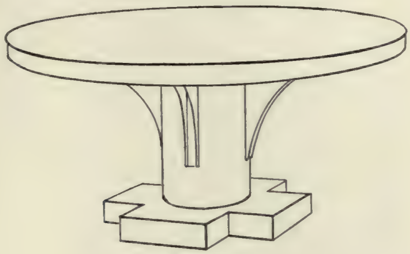


FIG. 28A.

Circular Opening:—The scoring for the circular opening in the base is done just outside (less than $\frac{1}{16}$″) of the line marking the real circumference of the shaft. Otherwise the folding of the flanges would reduce the opening too much to admit the shaft. The flanges are cut all around the circle.

Circular Rail:—It will be found easier to fold on the scoring line of the circular rail before notching. The fold will serve to prevent notching too far. The notches may be cut free-hand. First make cuts at right angles to the fold and along the whole length of the strip. These should be just close enough together to permit the rail to curve smoothly along the edge of the table top. They may be at least ¼″ apart. Then cut out the little wedge-shaped pieces to prevent overlapping of the flanges when pasted.

Circumferences:—In this work it is sufficient to multiply the diameter of a circle by 3-1/7 to find the circumference. Compare the width of the pattern for the shaft with the diameter of the center circle of the table top. Make comparisons of similar relations.

See Figs. 28A and 28B.

Order of Pasting:—Lay the table top with the lined side up. The pasting line for the rail is the circle $\frac{1}{16}''$ in from the edge. A strip of paper curving like this should be provided to use in pasting the rail in place. To paste the rail work from right to left along the edge of the circle nearest you. Spread the glue thin along the inner side of the pasting line for a distance of about 2″.

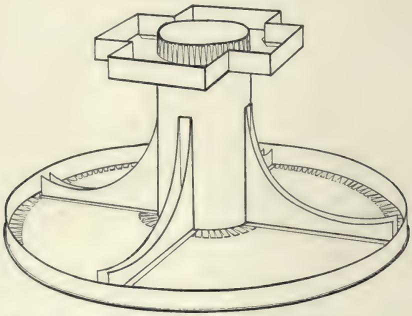


FIG. 28B. TABLE INVERTED TO SHOW CONSTRUCTION.

Hold the rail with the flanges at the lower edge folding away from you. Place the right end on the glued section, adjusting it carefully on the line. Lay the curved strip of paper over the flanges while pressing them in place.

Before the glue dries fast, push inward the free part of the rim at the left of the glue and spread another stretch of glue, starting just where the last ended. Replace the rim and press. Repeat the process until the circle is completed. If the generous length of the strip for the rail allows too long a lap, trim off before pasting the final section.

Fit the free end inside of the pasted one, mark the lapping line on the inside of the pasted end, and spread the glue on the space to be covered by the lap, also along the last stretch of the circle. Paste in place.

Shaft:—Paste the strip at the right side of the shaft pattern under the left edge. The flanges should fold outward. Turn the shaft with the flanged end against the center of the table top. See Fig. 28B. The edge of the shaft should fall on the center circle and the outer edges of the flanges touch the second circle. Paste in this position.

Brackets:—While the table top is still reversed fit a bracket into the angle between the shaft and top just where one of the cross lines of the table top touches the shaft.

The center rib of a bracket should rest against the shaft. The side wings will extend toward the rim and should lie parallel with and on either side of a cross line of the table top. See Fig. 28B for placing of laps.

See that the center rib is vertical. Mark its position on the shaft. Paste in place. Repeat with the remaining brackets.

The Base:—See Fig. 28B. Lay the base, lined side up. Adjust the half-inch rim in a vertical position around the broad cross form in the center. The narrow laps will slip flat over the cut edges of the cross form and the square laps at the corners should fold against the inner side of the adjacent section of the standing rim. Paste in place.

Turn the base right side up. The center flanges should fold downward. Carefully push the shaft of the table down thru the circular opening of the base. If the opening is too narrow snip the flanges a trifle deeper. If the opening is too wide to fit neatly, slip off the base, lay it upside down on another piece of paper. Trace around the cross form and along the folded edges of the flanges of the circle. Cut out the pattern traced, trimming the circle to form a neat but not tight collar around the shaft. Fit this shape on top of the base and paste.

Slip the base back in position on the shaft. The bottom of the flanges should come just to the lower edge of the shaft. Adjust so that the brackets stand exactly over the centers of the four arms of the base. Paste in place.

(*To be continued.*)

EDITORIAL

OF all our institutions none has been so little affected by rapidly changing social conditions as our system of education. For centuries education has been regarded first and foremost as an end in itself. The mastery of arbitrarily fixed amounts of knowledge in certain departments of learning has constituted what we term an education, and our methods and instruction have been directed toward the accomplishment of this end. Our public schools are based upon the assumption that knowledge is the end of education. This is at least a legitimate inference from a study of the subjects taught, the methods of teaching and the results, and in spite of the earnest claims that the schools prepare our children to meet the exigencies of life. The subjects are unrelated—to each other, to the immediate life of the pupil, and to his later life experiences; the methods are analytic and abstract; the results in the majority of cases are minds confused by abstract and unrelated ideas, and lacking in initiative and power to meet the conditions imposed by actual life.

Education: Knowledge and Efficiency

The interpretation which limits education to acquired knowledge hardly meets the demands of today. Efficiency is coming more and more to be recognized as one of the ideals of education, and with the acceptance of this new meaning of its purpose, the end of education becomes the realization of efficiency as well as acquisition of knowledge, and we must change not only our conception of the meaning of education, but our methods as well. There must be a recognition of the fact that the very large measure of efficiency is expressed in terms of action, and that provision must be made in our school work for concrete expression as well as for abstract thinking.

One of the most surprising facts in connection with the history of education is the almost universal failure of educators to recognize the significance of activity as a factor in educational work. Three truths incident to human advancement stand out with perfect distinctness: First, that the progress of civilization has paralleled the development of certain activities, or occupations in which hand expression is the dominant

factor; second, that the significant, effective advance of society today is expressed very largely in terms of action—thru mentally directed bodily activity, and third, that the natural tendency of the child is to express himself concretely—by doing. And yet, despite these truths, our public school courses and methods fail almost universally to recognize the great factor of activity in the development of the child.

Activity should have an important place in the work of the schools, not as a separate course added to, and apart from other subjects, as drawing and manual training have largely been, but as the unifying element, the basis of other school work. The term activity also should have a broader significance than that which comes within the confines of the occupational work of the schools alone. The actual life of the child should be brought into the service of the schools, and every day of the pupil's life, in school and out, should naturally present problems, the solution of which will demand a knowledge of what is essential in the so-called academic subjects. School work thus will be vitalized, for the pupil will find knowledge desirable because immediately necessary to success in affairs that appeal to his interests.

—W. E. Roberts.

Safeguarding Dangerous Machinery When a community is considering the installation of a manual training equipment involving the use of so-called dangerous machinery, one of the first questions which arises in the mind of thoughtful, as well as timid men, of those in favor, as well as those opposed to manual training is, "Is it dangerous to install machinery in the public schools?"

When this question arises it usually has as its basis one of five reasons.

(a) The person asking it is unfamiliar with the fact that many schools in the country have been equipped for a score of years with band-saws, circular saws, lathes, and other machine tools.

(b) The inquirer has an idea that the labor laws of his particular state forbid children under sixteen years of age to operate such machinery.

(c) The man has a natural adversity to machinery and has always considered it dangerous and will prove to you that sooner or later every woodworker loses one or more fingers.

(d) Another is opposed to the use of machinery because he says that all things should be made by hand in these schools; i. e., that these days are "too well known as machine days. Let us return to craftsmanship."

(e) Then there is the type of man who is a natural-born objector, who sees a good opportunity for knifing any extension of manual training by objecting to additional machinery, which is a necessary part of the advanced courses.

The man who does not want to extend the manual training work, will find what he thinks is a good excuse, and he might as well fasten objection upon the use of machinery as anything else. The man who is ignorant of the fact that machinery has been used in these schools for a score of years, ought to be convinced when he is made aware of the fact. The man who is opposed to the use of machinery because it takes the place of handwork must be shown how the use of machinery supplements handwork and makes it possible to do advanced cabinet making and pattern-making as well as saving time from mere duplication of manual effort when the student has already learned the hand processes involved and has become skilled at them.

Circular saws, band-saws, jig-saws and other machinery are not the only dangerous things in high schools. The basement contains a steam boiler; the third floor may contain a chemical laboratory; the wooden stairs may be so worn that nails project in places; a sleet storm may make the sidewalk and the steps slippery. Pupils have been seriously burned in a chemical laboratory; girls have tripped over nails sticking up through worn boards; teachers have fallen on slippery steps; children have been burned to death because of the lack of fire escapes, but these incidents do not constitute reasons for doing away with chemical laboratories or stairs or sidewalks or school houses.

The school ought to provide every protection possible in order that they may not be held responsible if an accident does happen. Schools ought to be as careful in protecting machinery as the best factories. They should be more careful in protecting human life. Obviously machinery should be guarded according to the very best of factory practice.

School authorities that intend to allow pupils to use machinery in school hours should keep in mind four points in order that they may protect themselves if an accident occurs and the case is taken into the courts.

(a) That only trained men are to be engaged as instructors. If the school authorities engage amateurs as teachers they ought to be liable for damages.

(b) They should be able to show that this instructor had given proper instruction in the use of such machinery through demonstrations

to the classes, by the recording in note-books of points which need to be considered and such other evidence as makes clear in the court of law or of public opinion that the instructor had done his best to teach correct methods.

(c) The machinery should be carefully guarded. Every school should do as well in this respect as the best factory. It can even go further and still be well within the line of protection.

(d) Typewritten notices under glass and properly framed should be posted near every machine, and should give specific directions relative to the conditions under which this machine is to be run. If, for example, the boy is not expected to use a circular saw until he has gained permission from the instructor, the notice should make that fact very plain. It is readily seen that such a notice will serve as good evidence in time of trouble. And finally, the watchword must be one of eternal vigilance on the part of the instructor.

—A. D. Dean.

William L. Sayre

For a frontispiece in this issue we are glad to be able to present the portrait of William L. Sayre recently elected principal of the new West Philadelphia High School for Boys. It is not, however, because this recent honor has come to him that we present his portrait, but because of the service he has done to his city and the nation as a pioneer in the field of manual training. When the first Manual Training School was opened in Philadelphia in 1885 Mr. Sayre was the vice-principal, under Lieutenant Robert Crawford of the United States Navy. When Lieutenant Crawford was recalled to the navy on the first of January, 1887, Mr. Sayre became the principal of the school, and ever since that time, even up to the present year, Mr. Sayre has been principal of the Central Manual Training School. His school was the first public manual training high school in the United States, if we except the Baltimore Polytechnic School started about two years earlier. Thruout the full quarter of a century the Philadelphia school under his skillful guidance has done a noble work. It has been the mother of several other manual training schools in and near Philadelphia and it has sent out hundreds of graduates who have served the community efficiently and who look with affection upon the old Central School and their friend at its head.

Mr. Sayre was born in 1840 in Byberry in the upper part of Philadelphia County. He received his education in the public schools

of Philadelphia, and was admitted to the Central High School in 1854. In 1858 he began his career as a teacher in the Red Lion School in Bucks County, Pennsylvania. From this little country school he advanced thru the various grades of his profession to the principalship of the Vaughan Grammar School. For a time he was teacher of drawing at the Central High School.

Mr. Sayre's efficient work in the Central Manual Training School and the influence that has gone out from that school illustrates in a striking way the great value of continuity of effort in a single field, even when working against obstacles, for Mr. Sayre's task was not an easy one, and the development of his school has been tremendously hampered in its growth for want of better buildings and equipment. He now richly deserves the honor of his new appointment which has come to him on account of distinguished service.

In the October number we referred to the broadening of the activities of the German Society for the Promotion of Boys' Handwork and to the change in the name of the journal published by that Society. Since writing that paragraph we have learned that the attendance at their summer school for training teachers is increasing so rapidly that it is probable that arrangements will soon be made for offering all-the-year-round courses. This announcement, added to the previous one will be welcomed by American students who wish to spend a year in Germany in further preparation for teaching the manual arts.

Along with this information comes the still more interesting statement that unusual honors have been bestowed upon Dr. Alwin Pabst, the director of this school and editor of *Die Arbeitschule*. The government of Saxony has given him the rank of Professor, which means much more than the same title in this country, and the German Emperor has conferred on him the Order of the Red Eagle. These marked distinctions are not only a personal honor to Dr. Pabst, but they may also be regarded as a most gratifying recognition and approval of the work done by the Society of which he is the directing officer.

—C. A. Bennett.

ASSOCIATIONS

BOSTON MANUAL TRAINING CLUB.

The Club has held two meetings thus far this year; the first for the transaction of business chiefly, October 12; the second, our 1912 "Get-Together Dinner" at the Boston City Club, on November 16.

The following extracts from the "Outline of Problems for the Boston Elementary Schools, Grades 6, 7, 8," are presented here because of their general interest to shop teachers.

THE PURPOSE OF MANUAL TRAINING.

The purpose of all manual training is to secure a vigorous mental reaction thru the pupil's manual activity and his interest in the constructive problem. Benefit to the worker results only when this reaction is real and vital. The significance of this fact is of prime importance, and should have great influence in determining the methods to be employed by the teacher. Provision should be made in every grade for as large an amount of individual effort as it is possible to secure. While the teacher should constantly bear in mind that the end in view is the boy himself, not the finished product, the problem should be as well executed as is consistent with the ability of the individual; and it is generally advisable that the tool processes employed be those practised by the best cabinet-makers. Work in which the pupil does not put his best effort should not be accepted.

As indicating a somewhat new departure in the shop work of a large city school system, it is interesting to note that one-tenth of each pupil's manual training time is available for work upon objects to be used for school purposes. The necessary omissions from the year's course are, in every case, the problems, regardless of position, which most nearly correspond in exercises and difficulty to the work done.

In case of *class* work of this character, team work and industrial methods are recommended.

RULES FOR SQUARING TO DIMENSIONS.

It is deemed advisable to present sets of "rules for planing," and after careful study certain forms have been fixed as standards. The statements are short and to the point, and should be learned and used by the pupils, altho, for the sake of brevity, the number of the rule is used for reference in these outlines. The pupil should be able to give instantly the substance of the directions or tests for each rule.

The rules for squaring to dimensions when stock is the right thickness are given under Grade VI; from the rough stock, under Grade VII.

WHEN STOCK IS THE RIGHT THICKNESS.

STATEMENTS.	DIRECTIONS.	TESTS.
1. Select better broad face	If warped, choose concave side. Mark it | .	Test with back of try-square.
2. Plane better narrow face	Make it straight, smooth and square with face | . Mark it ||.	Test with try-square in at least three places. Test for straightness with straight edge.
3. Gage width and plane	Gage from face || on the two broad faces. Plane to the middle of the gage lines, and stop. Do not mark this face.	Test for flatness only, using back of try-square.
4. Square better end...	Work from marked faces only. Square a knife line around near end. Saw close to outside of line. Blockplane to knife line, and stop.	Test for flatness using the back of the try-square. Test for squareness from marked faces.
5. Lay off length and square the other end.	Lay off finished end. Work from marked faces only. Square a knife line around. Saw close to outside of line. Blockplane to knife line, and stop.	Test for flatness using the back of the try-square. Test for squareness from marked faces.

FROM ROUGH STOCK.

STATEMENTS.	DIRECTIONS.	TESTS.
1. Plane better broad face	If warped, choose convex side. Make it smooth and flat. Mark it | .	Test with back of try-square, winding sticks, and straight edge.
2. Plane better narrow face	Make it straight, smooth and square with face | . Mark it ||.	Test with try-square in at least three places. Test for straightness with straight edge.
3. Gage width and plane	Gage from face || on the two broad faces. Plane to the middle of the gage lines, and stop. Do not mark this face.	Test for flatness only, using back of try-square.
4. Gage thickness and plane	Gage from face | on the two narrow faces. Plane to the middle of the gage lines, and stop. Do not mark this face.	Test for flatness only, using the back of the try-square.
5. Square better end...	Work from marked faces only. Square a knife line around near end. Saw close to outside of line. Blockplane to knife line and stop.	Test for flatness, using the back of the try-square. Test for squareness from marked faces.
6. Lay off length and square the other end.	Lay off from finished end. Work from marked faces only. Square a knife line around. Saw close to outside of line. Blockplane to knife line, and stop.	Test for flatness, using the back of the try-square. Test for squareness from marked faces.

INDIVIDUAL PROBLEMS.

During the last half of the year the work should make demands on the pupils for greater originality and initiative in selecting and planning for the execution of problems which require more joinery or construction. While there is no intention of discouraging the making of large pieces of furniture, it is expected that the teacher will allow only those pupils to make them who have patience, strength, and skill enough to produce substantial, attractive, and well finished results without disproportionate demands on the instructor. It is recommended that teachers have mounted pictures of such problems as are interesting to the boys of their respective districts, displayed as incentives and suggestions. All individual construction should follow the making of satisfactory sketches, and every opportunity to get pupils to make acceptable working drawings should be improved. It is obvious that no list of problems can fully embody these principles, but there are appended some suggestions which may be supplemented.

Frames.
Pedestals.
Tabourettes.
Small tables or stands.
Costumers.
Plate racks.
Book troughs.
Book shelves for walls.
Small bookcases.
Piano benches.
Simple chairs.
Stools.
Simple desks.
Small settles, etc.

RICHARD BENSON.
Chairman Press Committee.

SECOND NATIONAL CONFERENCE ON VOCATIONAL GUIDANCE.

The second National Conference on Vocational Guidance was held in New York, October 23d to 26th, under the auspices of the Central Committee on Vocational Guidance. Two years ago the Boston Chamber of Commerce, in cooperation with the Vocation Bureau, called the first national conference in Boston. Since that time many vocational guidance projects have been undertaken in various cities; this second conference was called as a sort of experience meeting.

A rather comprehensive exhibit in the New York Public Library gave an indication of the extent of the activities which this movement has called forth thruout the country. As a pioneer city Boston's display was, of course, of special interest to the visitor. The publications of the Vocation Bureau and the charts prepared by the Women's Municipal League, showing the training opportunities afforded in the vicinity of Boston, and the booklets of the Girls' Trade Education League constitute a remarkable exhibit of the social service spirit of that city. Other interesting exhibits were contributed by the Vocational Guidance Survey of New York City, the Cincinnati Vocational Bureau, and the Central High School of Grand Rapids.

The general topics of the sessions included the following: Placement; Following up; Study of Occupations; Scholarships; Vocational Analysis; Op-

portunities for Vocational Training; Methods of Vocational Direction; Relation of Vocational Guidance to the Employer.

The principal results accomplished by this Conference seem to be the definition of certain of the more important problems confronting the workers in this field, and the formulation of a few of the more general propositions to which assent could be secured. It would be premature at this stage of development for any one to announce a definite or final scheme of vocational guidance. The fund of information, in detail, of conditions in the industries, of economic conditions in the families of the children concerned, and other such far reaching problems, must be far more comprehensive and better organized than at present before a definite program can be formulated.

The method of organization of this Conference may be of interest to those who are concerned with the details of Association work. At one of the early sessions the chairman was directed to appoint a committee to consider and report on plans for organization of a national association for vocational guidance. This committee held several meetings for discussion of the problems involved, and in its report at the final session, recommended that the attempt to effect a national organization be postponed for the present. Instead, a national committee consisting of twenty persons was created. The members present at the business meeting nominated from the floor and elected a nucleus committee of seven persons, which committee was charged with the duty and responsibility of canvassing the entire country for suggestions and selecting the additional thirteen members to make up the committee of twenty. This committee of twenty, after it shall have been organized, is to have the responsibility of directing the development of the movement for vocational guidance, and of calling a third National Conference at such time and place as may seem best.

The temporary chairman of the organization is Eli W. Weaver, Boys' High School, 25 Jefferson Ave., Brookyln, N. Y., from whom, doubtless, further information may be obtained.

NATIONAL SOCIETY FOR THE PROMOTION OF INDUSTRIAL EDUCATION.

The National Society for the Promotion of Industrial Education will hold its annual meeting in the City of Philadelphia on December 5, 6 and 7, 1912. The rapid progress which the movement for practical education in this country is making is opening large fields of usefulness for the Society and increasing the already large interest in its work and in its annual meetings.

It is the custom of the Society to meet alternately in the East and West, last year the session being held in Cincinnati and this year in Philadelphia. The cities in which the meetings have been held from year to year have been themselves greatly benefited by the presence of the Society and its annual convention. The interest in vocational education has been greatly stimulated, and in the wake of the meeting there have usually followed larger activities on the part of the local school authorities and schools, for meeting the vocational needs of its boys and girls, and men and women.

The program this year is an unusually strong one, many of the speakers being persons of national reputation. Among them are such notables as Ex-

Senator Albert J. Beveridge, of Indiana, Julia C. Lathrop, Chief of Children's Bureau, recently appointed by President Taft, Congressman William C. Redfield of Brooklyn, Hon. Carroll S. Page, United States Senator from Vermont and author of the Page Bill, Hon. William B. Wilson, Representative member of Congress, 7th Pennsylvania District, formerly Secretary United Mine Workers of America, H. E. Miles, Chairman Wisconsin Commission of Industrial Education, Racine, Wis., F. A. Geier, Chairman Committee on Industrial Education, National Metal Trades Association, Cincinnati; Florence M. Marshall, Principal Manhattan Trade School for Girls, New York; Mrs. Mary Schenck Woolman, President Women's Educational and Industrial Union, Boston; Clarence J. Owens, Managing Director Southern Commercial Congress, and others of equal note.

The different sessions of the Society will devote their attention to large and important topics. On Thursday morning a special session for members from Pennsylvania and others interested will discuss proposed legislation in vocational education for that state. Thursday afternoon, separate round-tables will take up the problems of securing teachers for vocational work in two sections; one dealing with boys' work and the other with girls' work. Thursday night, the annual banquet of the Society will occur. The subject for discussion being "Federal Aid for Vocational Education." Friday morning, the means of opening the way for vocational education in state and local communities will be considered. Friday afternoon, a symposium on debatable issues in Vocational Education will be held. Friday night, a symposium on the protection, equipment, and conservation of childhood thru vocational education will be discussed. Saturday morning, at its final meeting, ways by which the schoolmaster and the layman can do team work in helping get vocational education will be the theme.

Social workers, philanthropists, workingmen, manufacturers, business men, educators, and citizens interested in the welfare of its workers, will all find in this program much of interest and profit. All those interested in the Society, its purpose, and its annual convention, should write to C. A. Prosser, Secretary, Room 415, 105 East 22d Street, New York City.

CONFERENCE OF CHARITIES AND CORRECTION.

The seventeenth Annual Conference of Charities and Correction for the State of Illinois was held at Springfield, October 19th to 22d. The topics discussed included: Social Causes of Distress, by Alexander Johnson, Sec'y. of National Conference for Charities and Correction, Fort Wayne, Indiana; Social and Sanitary Surveys, by Paul Kellogg, Russell Sage Foundation, New York City; The Coordination of Social Agencies, by Professor George R. Mead, University of Chicago.

The National Association for the Study and Education of Exceptional Children held its third annual conference at the College of the City of New York, October 30th, to November 1st. The special topics considered were: The Exceptionally Bright Child; The Retarded Child; Rational Human Eugenics.

United States Commissioner Claxton was the presiding officer of the Conference. Information concerning the affairs of this Association may be obtained by addressing the Secretary at Plainfield, New Jersey.

DETROIT MANUAL TRAINING CLUB.

The Detroit Manual Training Club has organized for the year, and held its annual outdoor meeting down the river. The officers elected for the year are: president, Director E. G. Allen, Cass technical high school; vice-president, William Sargent, central high school; secretary-treasurer, Daniel Hickok, western high school.

The Club has planned for this year a survey of the industrial field in Detroit and vicinity, from the point of view of relating technical and manual instruction to the industrial needs of the community. Last year the Club visited a number of the larger manufacturing plants.

AMERICAN SOCIETY OF ENGINEERING DRAFTSMEN.

The annual business meeting of the Society was held at Teachers College, Columbia University, on Tuesday, October 1st. The officers elected for the ensuing year are the following: President, Prof. Charles W. Weick, Teachers College, New York; First Vice President, W. B. Harser; Second Vice President, Charles A. Clark, of the Crocker-Wheeler Company; Third Vice President, C. B. J. McManus; Fourth Vice President, A. T. Manner, of the Missouri Pacific Railroad; members of the Board of Governors, E. N. Chandler, H. L. Sloan, C. W. Fleming.

The second regular meeting of the year was held in the Engineering Society's Building, New York, on Thursday, October 31st. The program included a paper, illustrated by stereopticon views, on "How to Make a Record Drawing for a City Sewer Survey," by Rupert C. Smith, and a paper on "Utilities of Sheet Method in Buildings," by George W. Kittredge, editor of "The Sheet Metal Worker."

ILLINOIS SCHOOLMASTERS' CLUB.

The fall meeting of the Illinois Schoolmasters' Club was held in Peoria, October 25 and 26th. The Saturday morning session was devoted to a discussion of the proposed industrial and vocational education bill, which it is expected is to be brought before the next session of the State Legislature. The principal addresses were made by Dr. E. G. Cooley, of the Chicago City Club, Professor F. M. Leavitt, University of Chicago, and Dean Eugene Davenport, College of Agriculture, University of Illinois.

SHOP PROBLEMS

George A. Seaton, Editor.

Since the opening of Bradley Polytechnic Institute fifteen years ago many boys and young men have had their first experience in woodworking within its shops. Some of these have been pupils from the upper grades of one of the Peoria public schools; some pupils of high school grade, and others from the college department. There have also been many normal students who, though not really beginners, have had to put themselves in the attitude of beginners and take similar work. Altho it might be said that the work has not been given alike in any two of these years yet the first work for beginners was carried on essentially the same until very recently. That is, in the early years of the Institute the work started with two exercise pieces involving the use of the laying-out tools, the crosscut-saw, bit and brace. Later these were replaced by useful models, and still later by others, but in all of them the amount and kind of tool processes preceding the use of the plane, were practically the same.

During the past few years those in charge of the work have become convinced that more should be done to develop in the pupils facility and confidence in the use of the laying-out tools, the crosscut-saw and the rip-saw. This has resulted in developing a line of work quite different in character, which, altho it is likely to change somewhat in the future, may be suggestive to other teachers of woodworking.

The work is planned to precede the work with the plane, and all pieces are made of material that has been machine-planed to two dimensions; that is, S4S material. The work involves the use of the try-square, knife, marking gage, rule, crosscut-and rip-saws, hammer and nails.

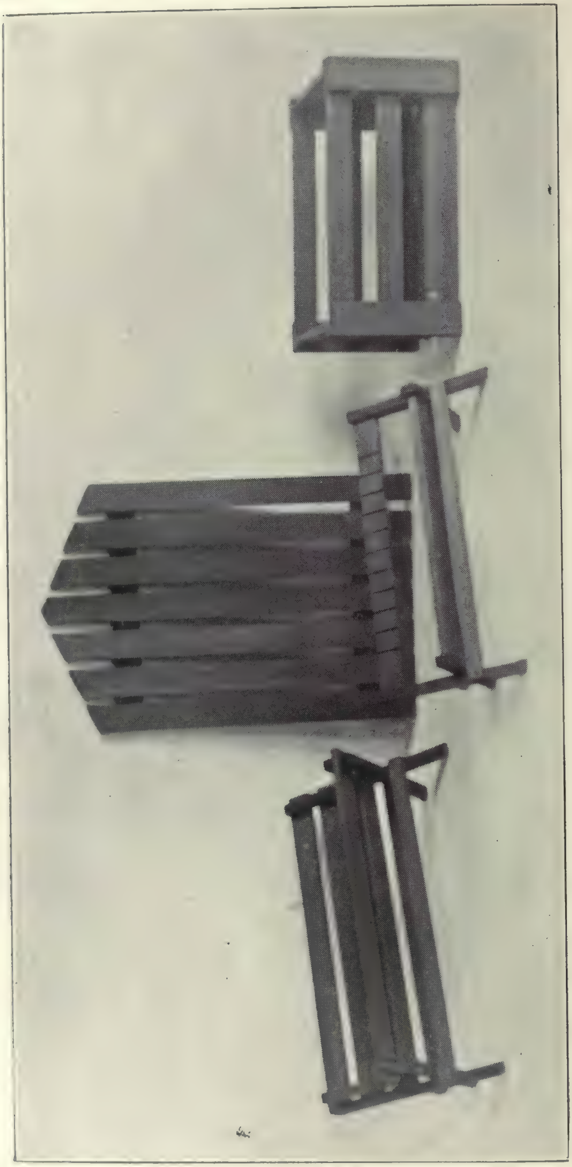
The problems are divided into two groups, one to teach crosscut-sawing and the other to teach rip-sawing. Figs. 1 and 2 belong to the first group, and Figs. 3 and 4 to the second. The working drawings of a few of these are on the following pages. No student is required to work out all the problems. Selection is made according to his needs and somewhat according to his wishes.

During last year this work was given to a class of seventh grade boys, and occupied about forty hours. Interest was not lacking in the class, as was shown by the fact that nearly every piece made was taken home, yet such action was not allowed until the pupil had paid for the material used in making it. Of course the standard could not be held as high in such a class as in a class of normal students, but good results were obtained. It is believed that this work could well be carried on in a sixth grade, but that has not yet been tried. At the close of this preliminary work each class is given a test similar to the following:

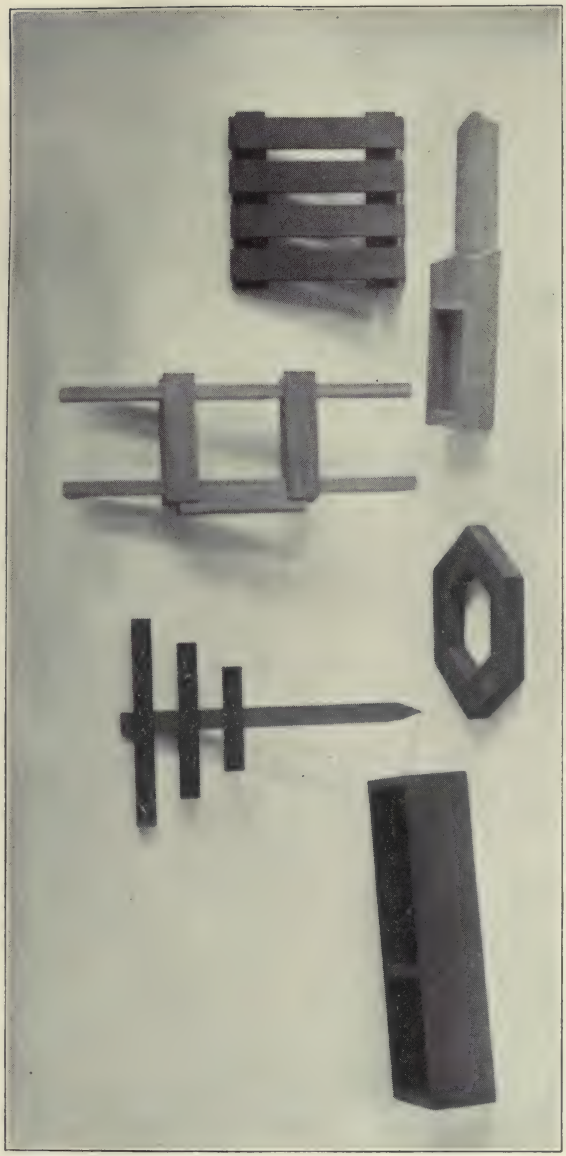
A piece of wood having two adjacent surfaces machine-planed square with each other is given out, and the following directions: (It it announced that work will be graded on smoothness, accuracy and speed.)

Mark working face and working side.

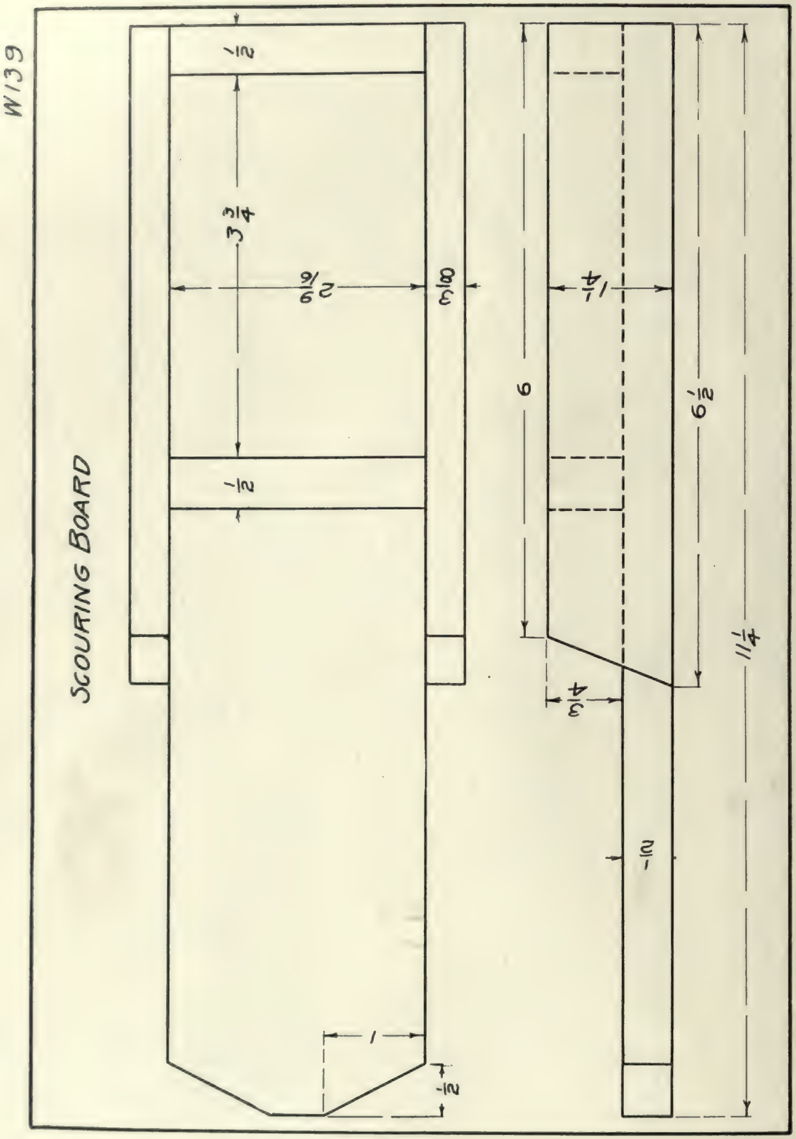
Knife around at the following distances from the end of the piece: ½, 1-7/16, 2, 2-15/16, 3-1/2, 4-7/16.

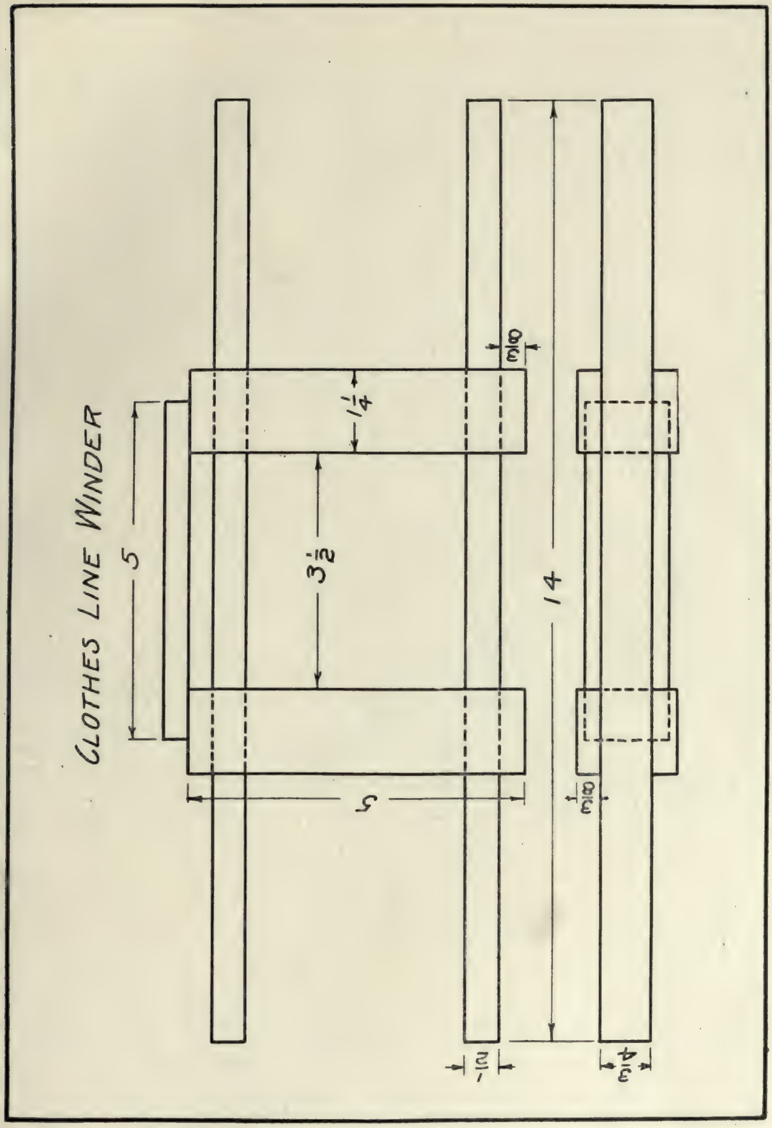


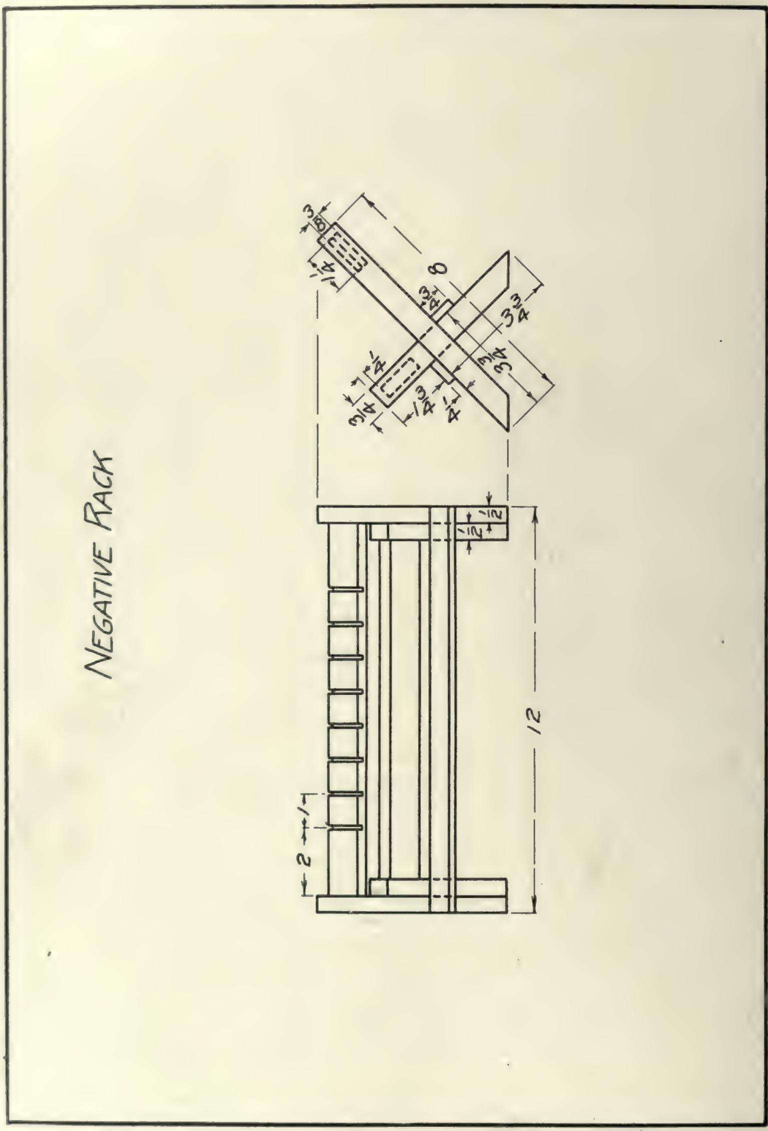
GROUP I. CROSSCUT-SAWING.



GROUP I. CROSSCUT-SAWING.


W139
SCOURING BOARD


W134
CLOTHES LINE WINDER
5
3½
1¼
14
5
3/8
1/2
3/4


NEGATIVE RACK
8
12
2
1

GROUP II. RIP-SAWING.

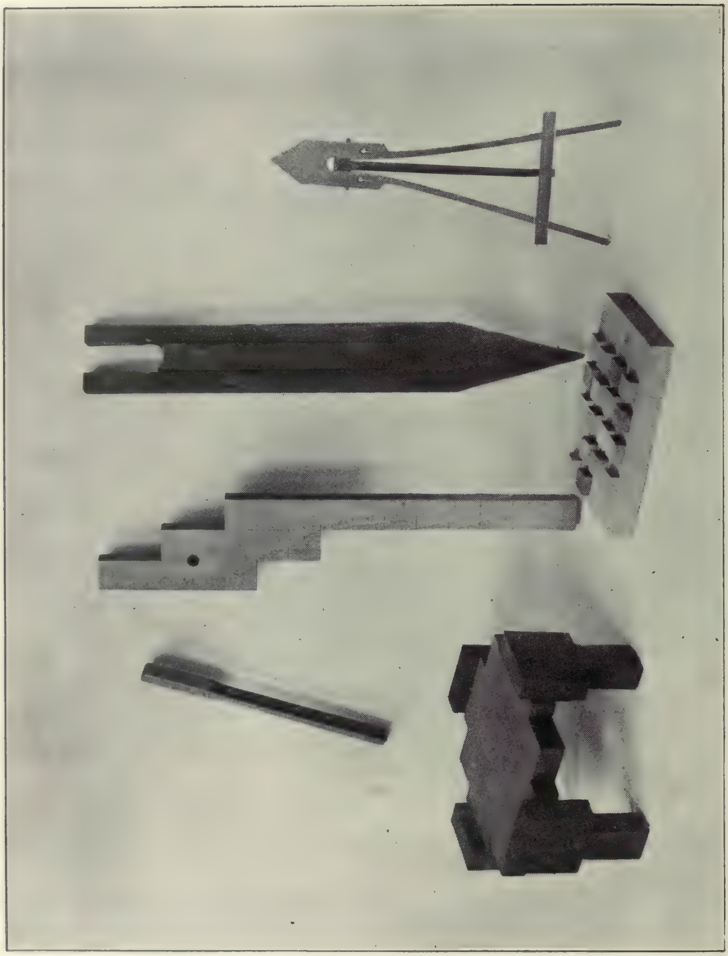
Set gage at ¼"; gage two lines from the working face and two from the working side.

Set gage at $1\frac{3}{16}$; gage two lines from the working face and two from the working side.

Rip-saw four surfaces of first interior cube only.

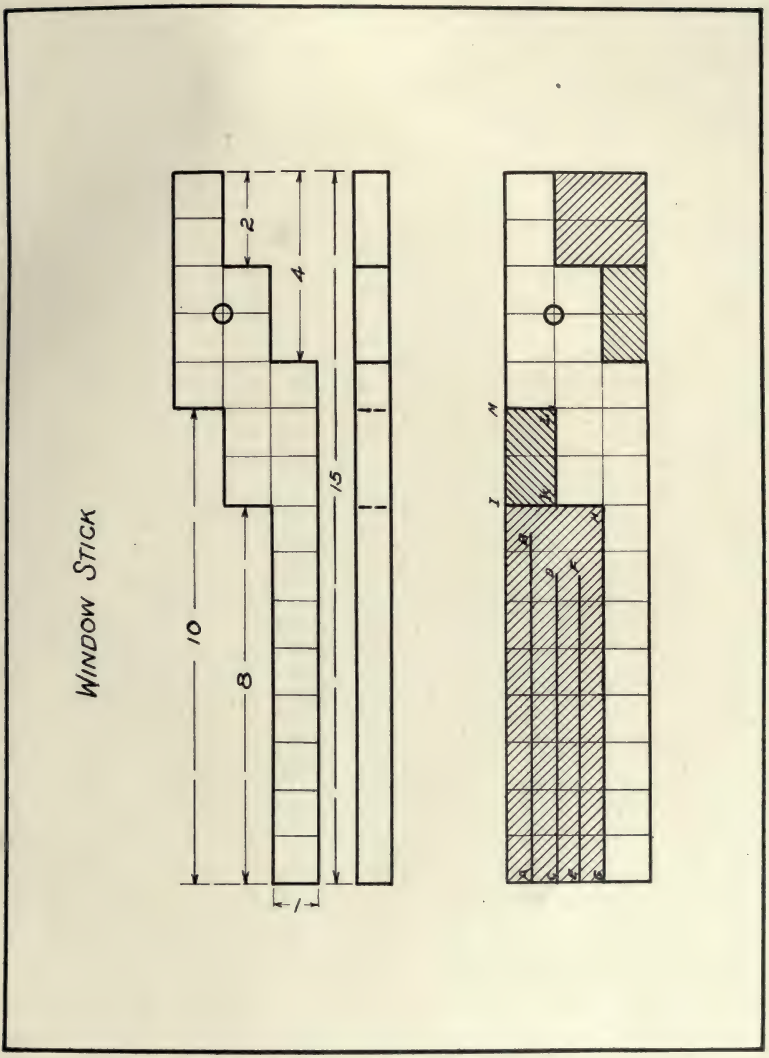
Cross-saw two surfaces of first interior cube.

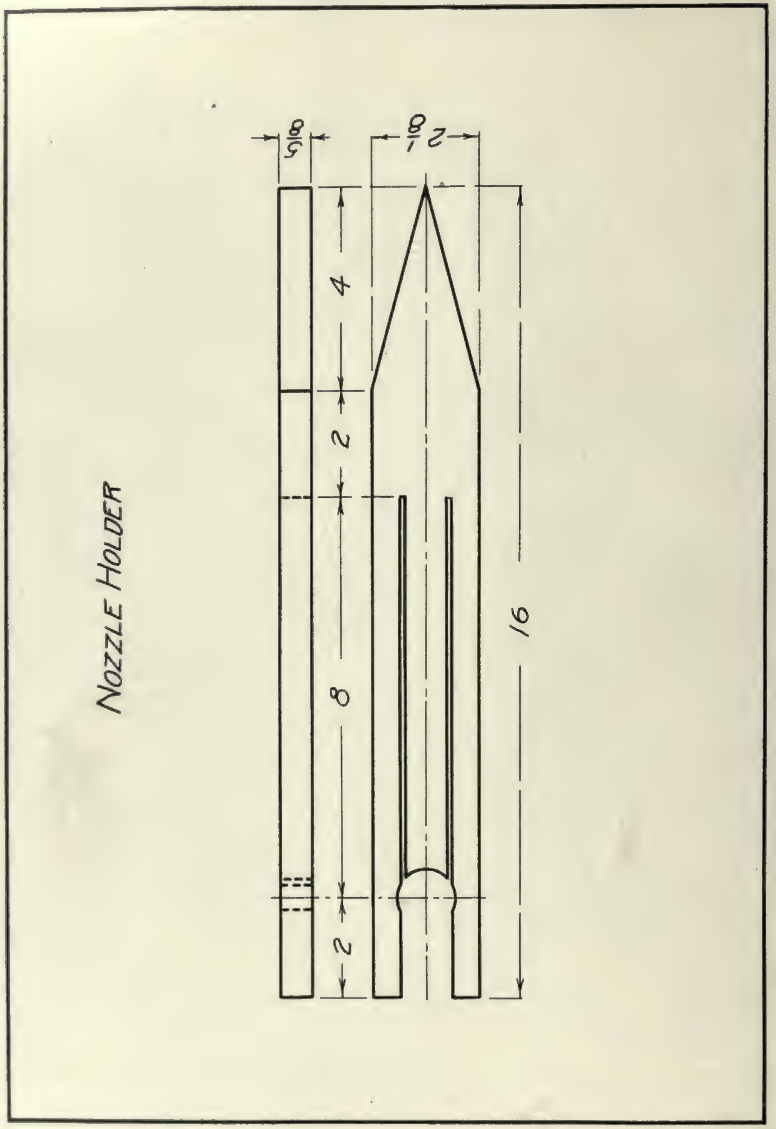
Rip-saw four surfaces of second interior cube.



GROUP II. RIP-SAWING.

W 140




NOZZLE HOLDER
5/8
2 1/8
4
2
8
2
16

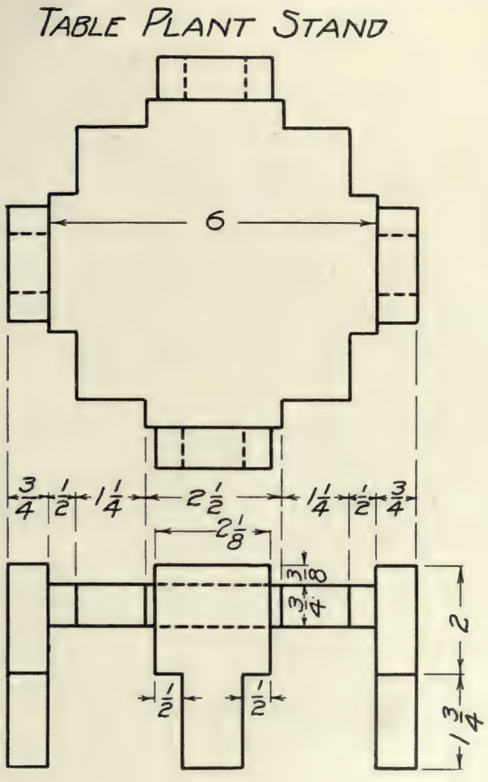
Cross-saw two surfaces of second interior cube.

Rip-saw four surfaces of third interior cube.

Cross-saw two surfaces of third interior cube.

In a test similar to the above, given recently to a class of twenty-five junior normal students, all but three completed the work in forty-five minutes or less. The work of these three and of one other was more than one sixty-fourth of an inch from the correct dimensions on the single cubes, and therefore they were required to do more work in these two groups and take another test.

—C. S. VanDeusen.



CURRENT ITEMS

ACTIVITIES OF THE NORMAL SCHOOLS.

THE TRAINING OF TEACHERS OF THE MANUAL ARTS IN MICHIGAN.

A forward step in the training of teachers for special subjects has been taken by the state education department in Michigan. As at present arranged each of the normal schools maintains departments in the special subjects. Beginning with the fall of 1913, under the new plan, the State Normal College at Ypsilanti will prepare teachers in the household arts; the Western Normal School at Kalamazoo will train teachers in the manual arts and trades; and the Central Michigan Normal School at Mt. Pleasant will prepare teachers of agriculture. The normal school so designated for each subject is the only one empowered to issue diplomas or teaching certificates in the given subject. This will not curtail the usefulness of the departments already organized in other than the given subject, since it will continue to be desirable to provide all the special subjects as electives. The new ruling, however, will insure, by means of this concentration of effort, greater uniformity, and thoro technical training for the special teachers. The same general scheme is in operation in Maine where altho all of the normal schools teach the special subjects, only one has a course for the training of teachers in manual arts, and one the training of teachers in domestic arts.

The Eastern Kentucky State Normal School, at Richmond, requires two semesters' work in manual training or domestic science of all students taking the intermediate course of study, which corresponds to the usual second year of normal school work. Special courses in these subjects are provided for those who wish to qualify for teaching these subjects.

In the State Normal School at Albion, Idaho, all students are required to take at least one year's work in the manual arts department. The work of that department includes woodworking, cabinet construction, turning, pattern-making, forging, sheet metal work, arts and crafts design, and elementary manual training. Elmer A. Bull took charge of the department this year. Mr. Bull was formerly director of manual training at Yankton, South Dakota.

At Stevens Point Normal School, in Wisconsin, two and three year domestic science courses have been established, also one and two year home maker's courses. Miss Emma Fecht, of Bradley Institute, has charge of the home maker's courses.

The Concord State Normal School at Athens, West Virginia, has recently opened a department of home economics, under the direction of Miss Sadie Bryson, of the University of Minnesota.

The four state normal schools of Texas now have a uniform course of study. This course has been arranged in groups, in one of which each student will enroll, instead of selecting electives at random as formerly. The groups are the agricultural, preparing students to teach agriculture in city or rural schools; the industrial arts group, preparing teachers of manual training and home economics; the language group; the primary, elementary, and art group; and the science-mathematics group.

The State Normal School at Natchitoches, Louisiana, has enlarged and improved its domestic science department. Miss Margaret Weeks has been elected head of the department.

EAST.

A NEW LAW IN RHODE ISLAND.

Rhode Island passed a law in 1912, authorizing state aid for industrial education. The first section of the law provides aid for manual and household arts courses in the public schools. The courses must meet with the approval of the state board of education. The aid is not to exceed in amount one-half the sum expended for equipment. In section two, aid is provided for towns which establish day or evening courses in vocational training, "including instruction in the principles and practice of agriculture and training in the mechanic and other industrial arts." These courses must be approved by the state board as to equipment, instruction, expenditure, supervision, and conditions of attendance. The aid in the case of these vocational classes is given for the expense of instruction to the amount of one-half of the expenditure for this purpose. The cost of equipment, buildings, land, or rent of rooms, may not be included in making up this sum.

Manual training high schools, or other high schools with manual training departments, are not eligible for aid under this section unless it can be shown that the courses are truly vocational.

IN INDIANAPOLIS.

Close correlation is characteristic of the departments of the Indianapolis Manual Training High School. Beginning with the free hand drawing classes, one finds the students, after having mastered the fundamental principles, designing such pieces of furniture as they wish to make in their homes. Those who are taking wood-turning in the shops, study the drawing of curves and design cups, vases, bowls, etc., in the drawing class. These designs they then turn in the shops. This correlation is again seen in pattern-making, foundry practice, and mechanical drawing. The mechanical drawing classes furnish the shops with drawings and blueprints. The pattern shop supplies the foundry with patterns, the foundry supplies the machine shop with castings, and the machine shop, in turn, makes such of the machines needed by the manual training department as are within the ability of the students to produce.

Two interesting features of the machine shop work are the keeping of time records and the illustrated lectures. The latter cover such subjects as iron and woodworking tools and machines; the production of timber, its preservation and uses; the production of pig iron, its conversion into iron and steel and their uses.

The policy of the school is steadily growing stronger in favor of the production of really useful furniture, machines, etc., made in a practical and workmanlike manner. This year the joinery and cabinet-making shops have a drum and disc sander and a hollow chisel mortiser as part of the equipment. It is thought that these will help make the work more practical and will increase the efficiency of such boys as may go into factories.

The crowded condition of the Indianapolis high schools made necessary the establishment of a branch high school. The Winona Technical Institute Trade School, which was unoccupied and its equipment idle, offered an ideal location for a temporary high school. The receiver of the Winona school was anxious to have the equipment used, so an arrangement was made and the school was opened with an enrolment of two hundred pupils. M. H. Stuart, principal of the Manual Training High School is in charge. First year work only is offered. In addition to the academic subjects classes were formed in free hand drawing, sewing, joinery and cabinet making, and in shop science. The last is a new subject which is proving very popular.

THE NEW DOMESTIC SCIENCE COURSE IN MILWAUKEE HIGH SCHOOLS.

The Milwaukee high schools now have a domestic science course of study, thus satisfying the demand that a girl be educated along the lines of her natural development and probable future occupation. English and mathematics, physiology, botany, zoology, chemistry, physics (elective), and one year of United States history comprise the academic part of the course. A foreign language may be substituted for English the last two years of the course. The special subjects fill out what appears to be a very rich and practical course. Cooking and sewing are given the first year. In the first semester of the second year are given dressmaking, laundry work, household accounting; and in the second semester, millinery, emergency and home nursing, and invalid cookery. In the eleventh grade, the first term is devoted to millinery, marketing, advanced cooking and sewing. The second term dressmaking, textiles, home decoration, furnishing and sanitation are offered. The following subjects make up the special program of the twelfth grade; first semester, advanced dressmaking, dietetics, feeding and care of children; the second semester, advanced dressmaking and tailoring and household management.

New York State's rapid progress in the manual, domestic, and industrial arts is shown by the following facts given in an address at the opening of the state education building in Albany in October:

All public schools, whether in cities, villages or rural districts, teach drawing. Three-fourths of the city schools offer courses in manual training, cooking and sewing. One-half the village schools give courses in sewing, one-third

WORK OF HIGH SCHOOL PUPILS IN MANUAL TRAINING—WELLSVILLE, NEW YORK,
T. G. RUSSELL, INSTRUCTOR.

in manual training and cooking. There are forty public industrial and trade schools with a day enrolment of four thousand and an evening enrolment of three thousand pupils. Twenty-eight village high schools have vocational courses in agriculture, and twenty others give agricultural teaching of a less definite character. There are ten thousand pupils in evening departments of existing day schools, learning the trade applications of drawing, science and mathematics. These industrial, trade and agricultural schools have been developed in New York under the department within the last four years. Meanwhile the number of pupils receiving such training has quadrupled.

Manual training and the domestic arts are being developed rapidly in the schools of Louisville, Kentucky, under the direction of Louis A. Bacon. Fourteen centers for this work were opened at the beginning of the school year. Ten centers are for white children and four for colored children. The arrangement of these centers makes it possible for practically all of the seventh and eighth grade pupils of the city to have the special subjects.

A number of Louisville women teachers took a six weeks' summer course under L. C. Gardner, of the manual training high school, in preparation for the work of teaching manual training in the new classes. In this summer course they worked out the problems as arranged in the course of study prepared by Mr. Bacon.

The following places in Wisconsin have recently introduced manual training into the schools: Wausaukee, Oconomowoc, Oconto, Merrill, Edgerton, Tomah, New London, Waukesha, Little Chute. Domestic science courses have been introduced in Oconto, Wausaukee, Barron, Prairie du Sac, Merrill, Monroe, Viroqua, Randolph, Black River Falls, Mondovi, Princeton, West Salem, Waterloo, and West Bend. At River Falls a new building has been erected for the use of these departments.

Plumbing and bricklaying have been added to the manual training courses in the Marquette, Michigan, schools. The department has a building of its own. The enrolment is increasing yearly, seventy-five high school students and 240 grade students having elected the subject this semester.

The safety of students is made of first importance in the machine-shop at the Grand Rapids, Michigan, Junior High School. Every machine has an individual motor, thus eliminating all shafting and belting. The large saws are encased in steel protective covering, and others are covered with wire netting. Students are not allowed to use the machines unless the instructor, J. K. Jensen, is present.

In Trenton, New Jersey, manual training has been taught for six years. There are now twelve shops and eleven instructors, including the supervisor, W. R. Ward. The value of good applied design is emphasized in grammar grade manual training in Trenton, while in the high school the emphasis is placed on good construction. In the special classes for defective and incorrigible

boys, the manual training work is varied a good deal. Chair caning is a favorite subject. The boys solicit chairs from their neighbors, bring them to school, cane them, and then charge a nominal price for the work.

Wood-turning has been added to the manual training course at Nashua, New Hampshire. The equipment consists of twelve lathes, a band-saw, and a grinder. The work in this department has aroused a great deal of interest among the high school students, and classes are crowded. Ernest W. Beck is director.

A comprehensive course in household economy has been introduced at Bates College, Lewiston, Maine. Its aim is both practical and cultural. It purposes to enable women to make their own definite contribution to civilization as sought and realized in the community and the home.

White River Junction, in Vermont, has begun a plan for linking the interests of the school more closely to the community by establishing courses in drawing, manual training, domestic science, and elementary agriculture. Cooperation with local trades and industries will be sought in developing the new subjects. Some classes for employed young people will be started later. Extension work in surrounding rural communities is also planned.

WEST.

Boys in the elementary schools of Minneapolis who are over twelve years of age will soon have the opportunity to spend half a day a week in manual training work in addition to the regular period for their grades. A special class for them has been arranged in six buildings and the work will soon be extended to other buildings. This plan has been devised by J. E. Painter, director of manual training, as a beginning in provision for that type of pupils who care little for academic subjects.

Interest in the manual arts and domestic science is steadily growing in Wyoming, and altho very few schools have courses in these subjects in the state, their introduction is being advocated at the educational meetings, and provision is made for them in new buildings being erected at various points in the state.

The new school building at Fruita, Colorado, has rooms for manual training and domestic science. At Trinidad, new equipment has been purchased for the high school and the old equipment has been placed in grade buildings. Household chemistry has been added to the course in domestic science. Florence has two grade buildings equipped for manual training. Colorado Springs intends to have a truly practical course in home economics having purchased and fitted up a residence for the classes taking this course and the arts and crafts. Manual training and domestic science classes began at Aguilar in November.

Rocky Ford, Colorado, has courses in manual training, agriculture, domestic science and domestic arts in the schools. Montrose County High School has agriculture and manual training courses.

The Clay County High School, at Clay Center, Kansas, has organized courses in manual training and mechanical drawing which will extend thru at least two years' work. Five periods, of eighty minutes each, will be devoted to these subjects, four to manual training, and one to mechanical drawing, each week. In connection with the regular problems, lessons will be given on lumbering, forestry, and methods of finishing work. The equipment for the new work was furnished at a cost of about three hundred dollars. W. G. Speer, of Manhattan, Kansas, is the instructor.

Several improvements have been made in the manual training department of the Wichita, Kansas, schools. Forging has been added in the high school. Frame buildings, of two rooms each, have been placed in the grounds of three schools to use as manual training and domestic science centers. L. G. Hare and G. M. Brown are teaching the manual training in the grade centers, and Misses Ellas Travis, Helen Smith, and Nettie Hollingsworth, the domestic science.

Arkansas City, Kansas, has a new $10,000 manual training building. On the first floor are five rooms given to the use of manual and domestic arts. On the second and third floors are the gymnasium and six rooms for grammar grade work. All grammar grade pupils are taught in this building by the departmental plan. Manual training is required of all pupils of these grades. A two-years' course is offered as an elective to high school students, who come to this building for their manual training work. Two men and two women teach the special subjects in the new school.

The manual training work in Salem, Oregon, has been growing steadily since its introduction in 1908. At that time the work was given to the grammar grade boys of one or two buildings under the direction of the art instructor. In 1909 three shops were in use and a supervisor was employed. In 1911 an instructor for grade work in manual training was engaged and the director took charge of the high school classes in the subject. Increased facilities are now in demand for the department.

Manual training in the schools of Puyallup, Washington, has been extended thru the sixth, seventh, and eighth grades. Two buildings have been erected at the high school grounds for use of the high school classes in manual arts, agriculture, and domestic science.

The manual training department at Port Angeles, Washington, will be located in new quarters after the holidays. H. S. Singer, the supervisor, has been appointed as supervisor of the county manual training work, in addition to his work in Port Angeles. He will assist rural teachers in organizing and conducting manual training classes in their schools.

A course in printing was arranged for the high school students in Pasadena, California, this semester. The course is in charge of an experienced printer.

Plans are under way in Pasadena for an industrial school in the manufacturing district. The school will be open to pupils of the grammar grades.

Interest in manual training and domestic science is growing rapidly in Texas. Houston is building two new junior high schools which will be well provided with manual training shops, domestic science laboratories, and drawing rooms. One of these schools is to be conducted as a vocational school, giving half time to industrial work. The rooms for these special subjects now in use in Houston have been opened to night school students who show great interest in the work and attend in large numbers. E. M. Wyatt is director of manual training in Houston. Manual training and domestic science have been introduced this year in Houston Heights under the direction of Ivan S. Blair, and Miss Mary F. Sears. South Houston has equipped her schools for manual training and agriculture.

El Paso, Texas, is to have a new high school, to cost about $250,000. The site includes four city blocks. The group plan of buildings will be used, consisting of a main building, a building for manual and domestic arts, a gymnasium and assembly hall, and the heating and power plant. As soon as the new school is completed, the manual and domestic art courses in the high school will be extended to a full four years. At present only one year of domestic science and two years of manual training are offered. Woodworking equipment only is at the service of the department. Two new instructors are assisting the supervisor, W. A. Burk. They are D. E. Chenault, of Hastings, Nebraska, and Roe E. Clark, of Rosedale, Kansas.

The manual training department of the University of Texas, at Austin, is being equipped and developed rapidly in order that it may prepare teachers for the subject. Woodworking, machine shop practice, and forging are now being taught and a foundry will be added in the near future. The classes are open to students in engineering also. Those preparing to teach the subject are given lectures on the theory of the subject in addition to the regular course. Trenmor Coffin is head of the department.

The schools of Douglas, Arizona, have a manual training department, occupying three rooms. The bench-work room is equipped with twenty benches and the usual complement of tools; in the wood-turning room are lathes, driven by a five-horse power motor; a saw-bench, a twenty-six inch planer, a ten-inch jointer, and a twenty-eight inch band-saw. These machines are operated by electric motors. The third room, used for mechanical drawing, is equipped with twenty drawing tables. The department, which was organized four years ago, is under the supervision of Howard B. Ross, who took charge at the beginning of the present session.

Domestic science and art have also been taught in the Douglas schools four years. Cooking is offered in the seventh and eighth grades and the high school.

Sewing is begun in the sixth grade and continues thru the high school. Machine sewing is taught from the eighth grade up, the course ending with dressmaking. Miss Cora Trimmer teaches cooking and Miss Mary Palmer teaches sewing.

MANUAL TRAINING POPULAR IN EVENING SCHOOLS.

A study of the public evening school situation in various states throws new light on some of the points regarding manual training being publicly discussed at the present time, such as its practical value, and how it can be vocationalized.

It is significant that at Salem, Massachusetts, mechanical drawing and machine shop practice, taught in the high school shops with the usual manual training equipment, are being given in the evening school as the first step in vocational classes for workers in the shoe and leather industry and in machinery manufacture.

In Lansingburgh, New York, Toledo, Ohio, Minneapolis, Minnesota, Holyoke, Massachusetts, and other localities, manual training and domestic science are indispensable features of evening school programs. Enrolment in such classes is very large, showing that the students find enough in these subjects to repay the effort necessary to attend evening school. The student body of any evening school is made up almost wholly of those who, in their daily work in the industrial world, have seen the necessity for self improvement if they wish to advance. As a rule, also, evening classes are organized in response to a direct demand from these people, and are not dominated by educational traditions. Thus given free choice, the selection of manual arts subjects by these students who know from actual industrial experience what they need, is of considerable interest.

A COLORADO PLAN FOR RURAL SCHOOL IMPROVEMENT.

The Colorado state board of agriculture has just appointed C. G. Sargent, of Grand Junction, to act as state rural school visitor. Mr. Sargent's work will deal largely with the modification of rural school programs so as to include the manual or domestic arts, or agriculture. The needs of the individual community will determine which of these subjects will be advised. The state will not attempt to prescribe a set course of study but will endeavor to arouse each locality to a realization of its needs and what form of school work will best secure the desired results. Mr. Sargent will get the county superintendents interested, and thru them will be reached the progressive teachers, and by means of their example and enthusiasm the whole lump will be leavened. The success of a program of this kind will depend largely upon the ability of the one man, the state visitor, to secure cooperation. Mr. Sargent's methods in carrying out this plan for rural betterment will be studied with keen interest.

Closely allied with this plan is an arrangement being made by the state board of agriculture for giving the farmers of each county in the state instruction in farm management and demonstrations. Professor D. W. Frear of the State College of Agriculture is in charge of this movement and is busy securing the assistance of leaders in the various counties.

FOREIGN NOTES.

THE FUTURE OF NAAS.

Since Otto Salomon died in 1907 three different attempts have been made to provide a successor. The fourth attempt is all the more likely to be successful because in the meantime the State in Sweden has intervened by the promise of a yearly grant, amounting for the present year to more than £2,000, which is to be devoted to the repair and upkeep of the Castle, the farm buildings, and the Seminary buildings, including the laying down of water-pipes and the installation of electric lights.

Last year the governing body, finding themselves in need of some outside help, took Privy Councillor P. E. Lindstrom, who was Minister for Church and Education in the late Cabinet, into their counsels; and they have now induced him to become the provisional Head of the Institution for one year at least, with the opportunity of becoming permanent Head if he sees his way to accept the post. The Director's salary is fixed at 8,800 kronor, and suitable provision is made for a retiring pension. The first course, for which there were two hundred applications, began on June 10. At this course Prof. Axel Herrlin is giving the lectures, in which duty he is to be replaced by Dr. Rurik Holm, Inspector of Elementary Schools (who is not new to the work), at the usual course in August.

The delicate question of the Director's relation to his governing body remains as it was. Whilst some maintain he cannot do Salomon's work unless he has Salomon's freedom, and others hold that a strong and capable Director will make his own position, it seems to be generally felt that a revision of the whole question may be necessary in the near future.

Still further changes may be expected at Nääs. For rather more than half the year the buildings there have been entirely unused; and in the impending reorganization and extension of continuation school work in Sweden, it is hoped, if we may judge from a speech of Minister Berg in the Gothenburg *Handels-Tidning,* that Nääs may become a centre for the additional training of teachers that may become necessary. "In the reorganization of our continuation schools," says Minister Berg, "which must shortly take place and whose aim will be to bring the instruction into close relation with the practical tasks the pupils are engaged in out of school, the State can make very good use of an institution like Nääs, which is so admirably adapted for arranging shorter courses of training in every practical subject. Such a use would be in closest agreement with the object of the institution, which is, according to the founder's original deed, to provide continued training for teachers of both sexes who have already entered the profession, and so to promote education in general and especially the use of pedagogic sloyd as one of its instruments."—J. S. T., *Educational Times.*

An interesting experiment in technical education of a highly practical kind will shortly be commenced by a well-known London firm of wholesale stationers. A lecturer connected with one of the polytechnics has been engaged to give a series of lectures to the apprentices, junior salesmen, and office boys employed by the firm upon such subjects as the technology of the products handled by them, and also such purely "business" matters as office routine, the best methods

of dealing with correspondence, the proper treatment of a prospective customer, the legal rights and duties of the employee, and so on. These lectures will probably be delivered in the buildings in which the firm carries on its business, and at a time immediately following the close of the day's work.

A sign of the times is the establishment of commercial sides or commercial departments in certain secondary schools in England. For many years parents who desired for their children a commercial training have had nothing to fall back on but the private "business training colleges"—institutions in which true education plays a very small part, and in which ideals are entirely lacking. To be effective, commercial training must be approached from a scientific point of view. A boy who is intended for a business career will derive benefit from a knowledge of the development of industry and commerce, the theory of banking, the principles of international trade, the determining factors in earning, the geographical influences affecting economic and political conditions in various parts of the world. Such a training is not incompatible with educational ideals, and is likely to make for increased efficiency in our industry and trade. In some of our schools the experiment has already been successfully tried with older pupils who have had a thorough grounding in the usual subjects of the secondary curriculum. Such a form of vocational training for upper classes cannot meet with the objections which are held towards practical and vocational schools, and, if carried out in a systematic manner, would undoubtedly have an influence upon commercial efficiency and competition for foreign trade.

The new Kelvin Technical High School of Winnipeg, Canada, has been completed at a cost of $350,000, with an additional cost of $35,000 for apparatus. D. M. Duncan is principal. This makes Winnipeg's second large technical school. A third will be built in the near future.

The editor of this magazine will be glad to receive photographs of manual training work for use in the Current Items department or as tail-pieces. In order to be acceptable, a photograph must be such as to reproduce well. Many photographs are rejected because they lack this quality, not because the subjects are not of interest. A clear, distinct print, neither very dark or very light, with good contrast in tone, with a *plain* background, unspotted, and *without lettering or printing,* is the best for reproduction. Objects photographed singly are preferred to groups. Soft platinum prints, or those of similar nature, do not reproduce well.

REVIEWS

King's Series in Woodwork and Carpentry. By Charles A. King, director of manual training, High School, Bay City, Michigan. American Book Co. 5¼ x 7¼ in. Elements of Woodwork, 146 pages, price 60 cents; Elements of Construction, 132 pages, price 70 cents; Handbook for Teachers and Normal Schools, 181 pages, price $1.00.

This is a series of five volumes, three of which deal with subject matter common to the average manual training shop. Of these three the "Elements of Woodwork" and the "Elements of Construction" are intended for use as texts, and the last, the "Handbook for Teachers," is to be used as a guide and reference book for teachers and normal students. The author is to be congratulated on the reliability and completeness of his discription of shop processes and constructions. From this standpoint the books deserve special recognition.

The lists of questions at the end of each chapter and the chapter of arithmetic questions in the second volume are valuable features and should be a great aid to pupils using the books as texts.

The drawings and illustrations show the regular type of models in common use. The designs are commonplace. —Louis F. Olson,

Stout Institute, Menomonie, Wis.

The Woodworker Series. Issued from the office of *The Woodworker,* London, England. 4¼ x 7 in.; pp. av. 90; price 6d. each, bound in paper.

The titles in this handy English series are Soft Woods and Colonial Timbers; Hard Woods, English and Foreign; Woodcarving; Polishing, Staining, etc.; and Wood-Turning. The two books on woods are by Percy A. Wells, Head of Cabinet Department of the Shoreditch Technical Institute, London, and author of *Modern Cabinet Work.* The volume on hard woods describes oaks, mahogany of many varieties, all of the well known hard woods, and a number of woods unfamiliar to the American manual training teacher, such as teak, padouk, and sandalwood. The volume on soft woods contains a chapter devoted to the growth, seasoning, structure, and defects of trees, and another devoted to the cutting, seasoning, commercial sizes and terms of lumber. The other chapters are descriptive of various woods. The whole series is illustrated.

—V. E. W.

Tin-Plate Working. By R. H. Clarke. The Technical Publishing Co., Ltd., London, W. C. 5 x 7¼ inches, 44 pp., 12 plates; price 1s, 6d.

The illustrations, both plates and half-tones, in this little English manual of sheet metalworking are to be commended. The author is workshop instructor and assistant in the engineering department of the Portsmouth Municipal Technical College. The models include a grocers' scoop, an oil bottle, a dark room lantern, a cylindrical pipe with elbow joint, funnels, and other very practical forms. —V. E. W.

Amateur Joinery in the Home; The Art of Polychromatic and Decorative Turning; Artistic and Decorative Stencilling. By George A. Audsley and Berthold Audsley. George Allen and Co., Ltd., London. 5¾ x 8¾ inches, price 4s. 6d. each.

These are three English publications in the series known as "Allen's Technical and Art Manuals." Each book is illustrated with full-page plates which are grouped in the back of the book. They differ from American practice in the respective subjects in the matter of design, which in these books is decidedly ornate. —V. E. W.

Illinois Manual Arts Association, Proceedings of the Ninth Annual Meeting. A. C. Newell, Illinois State Normal University, Normal, Illinois. 6 x 9 in.; pp. 95. Price 10 cents.

The subject for discussion at the ninth annual meeting of this Association, in Peoria, February 16th and 17th, 1912, was "Vocational Education." The papers cover not only the theory of the subject but include descriptions of actual vocational experiments. They are a distinct contribution to the literature of the subject.

Of great interest is the latest report of the committee on a course of study in the manual arts. This course of study has been gradually evolving since 1907. Altho the work of the committee is not yet finished, this latest report presents more complete outlines than those previous to this. The Illinois Educational Commission, and the State Teachers Association, and the University of Illinois have also been working on this same problem. The conclusions and results of the work of these organizations have been considered in preparing the course of study, which may be said to be representative of the best thought of the state on this subject.

The course of study includes outlines for courses in the manual arts for common schools in towns and rural districts; courses for elementary schools in cities; and for city high schools. Altho conditions differ in different states, such a course of study will at least prove suggestive and helpful in working out certain standards in other states as well as Illinois. —V. E. W.

Primer, The Edward Lear Book, Berry's Writing Books. B. D. Berry and Co., Chicago, 8½ x 7½ in.; pp. 56.

This is quite the most charming writing book we have yet seen. Each line of copy is taken from one of the well-known Edward Lear alphabet rhymes. Opposite each right-hand copy page is printed the rhyme with an appropriate picture in decorative effect and in soft tones of green and dull orange. The pictures are the work of Frederic Richardson. These animal pictures will delight the little folks who will receive from the whole effect an unconscious education in good taste and harmonious color. —V. E. W.

Toys and Toymaking. By George F. Johnson. Longmans, Green and Co. 5⅛ x 8¾ in. Price $1.00 net.

This book by the editor of *Educational Handwork,* who is also Inspector of Handwork for the Liverpool Education Committee, will interest those who are following the trend of manual training in England. The materials used for

the models are match stales, thin veneer, cardboard, glue, etc. The character of models and of materials would indicate use in the primary grades. With very few exceptions, the toys are miniature pieces of furniture or utility objects found in the home or in various occupations. They are not mechanical toys, goodly-sized things that "go," such as the average American boy has in mind when one says "toy"—and therefore we doubt if these models would have a very wide appeal for the children in our schools. —V. E. W.

Western Drawing and Manual Training Association, 19th Annual Report. F. D. Crawshaw, University of Wisconsin, Madison, Wisconsin, Room 219, U. H. 6 x 9 in.; pp. 234. Price 50 cents.

This is the volume of proceedings of the meeting held at Cincinnati, Ohio, May 1-4, 1912. It contains a list of members of the association, lists of officers and standing committees and the constitution and by-laws. The subjects discussed in the papers, which make up the bulk of the volume, cover a wide range, but thruout is observable the recurrence of the key-note, "adjustment." This note was first brought out in the address of the president, Mr. Crawshaw, who emphasized the need for adjustment in all departments of special teaching and especially in regard to industrial education. This last is the subject of the greater number of papers and round table discussions. Many significant statements are made in this connection in the volume which should reach a much larger audience than that present at the convention. A number of valuable papers are presented which give details of methods and courses, such as the paper by A. C. Newell, of the Illinois State Normal University, on "What Should Be Included in a Course of Instruction in Architectural Drawing?" This paper is full of just that sort of material that will help the busy teacher of the subject to plan and carry out a course. Indeed, practicality characterizes all of the papers and round table discussions. Manual arts teachers are fortunate in having available in permanent form such a volume of inspirational and usable material. —V. E. W.

Illustrations of Design. By Lockwood de Forest. Ginn and Company. 9 x 10½ in.; pp. 58. Price $2.00.

These illustrations are based on notes of line as used by the craftsmen of India, and represent oriental design. The author, thru residence in India, has had an opportunity to observe such designs in the making. The three simple notes which he gives as the basis for the composition of the designs are the triangle, the square, and the curve or wave. There is an explanatory preface by the author. The remainder of the book consists of fifty full page plates of elaborate carving, metalworking, and textile designs. The book is bound in portfolio form, in a removable binder, which will facilitate its use for classroom illustrative purposes. —V. E. W.

Notes on Neurology of Voluntary Movement. By George Van Ness Dearborn, M. D., Ph. D. William Wood & Co., New York. 7⅞ x 7¾ in.; pp. 48.

This pamphlet presents the results of a study in the laboratory of physiology of Tufts College, Medical and Dental Schools, Boston, Mass., and is reprinted from the *Medical Record* of May 18, 1912. The principal divisions of the

presentation are:—(1) Biological Orientation; (2) The Development of Voluntary Movement in the Infant; (3) The Adult Neurology of Voluntary Movement; (4) Conclusion.

"The main thesis of this essay may be succinctly stated in three sentences, thus: As a necessary preliminary to the exact neurology of the will, every deliberate movement, however simple, must be accorded a personal motive, often intricate, whose factors, in part merely neural, must be sought for. Each of these factors, psychological or physiological, implicit in a voluntary movement, has as its concomitant a functional set of nervous impulses. Because of the variety and complexity of the factors determining it, every deliberate movement must be considered the resultant of influences coming from practically every part of the brain or even of the entire grey fabric of the nervous system."

Reclaiming a Commonwealth and Other Essays. By Cheesman A. Herrick, John Joseph McVey, Philadelphia, 5¼ x 7 in.; pp. 201, price $1.00.

This little volume of essays by the president of Girard College contains much interesting material both informational and inspiring. Altho the subjects of the various essays are unrelated, all have an educational bearing which will increase their value for teachers.

The initial essay, "Reclaiming a Commonwealth," tells the story of North Carolina's educational regeneration and the relation of this uplift to the welfare of the state. The second essay, "Education the Keystone of Power," carries the thought on to the relation of education to the welfare of the nation. It includes brief discussions of foreign systems of education. Of the entire group of essays the one entitled "Unconscious Education" has the broadest message for teachers and should receive a wide reading. It emphasizes the importance of personality in the teacher as an educating factor. The essays on "The New Commercialism" and "Professional Ethics" set high standards of conduct. The last three essays in the book on "Supervision of the High Schools," "Old Age Pensions," and "Retirement Funds for Teachers" are largely devoted to information and will prove of use to those interested in these topics.

RECEIVED.

The Nerve Mechanism of Voluntary Movement. By George Van Ness Dearborn, Professor of Physiology in Tuft's Medical College. Reprinted from the *American Physical Education Review,* May, 1912. 12 pp.

State High Schools. The nineteenth annual report of the inspector of state high schools in Minnesota. By George B. Aiton, 1601 University Ave. S. E., Minneapolis, Minn. This gives many facts and figures concerning the remarkable development of the high schools of the state under the Putnam and the Benson-Lee Acts.

The Kingdom of Dust. By J. Gordon Ogden. Popular Mechanic Company, Chicago. Price, 50 cents.

The Dying Hickory Trees: Cause and Remedy. By A. D. Hopkins, Bureau of Entomology circular No. 144, U. S. Department of Agriculture, Washington, D. C.

FIELD NOTES

O. H. Johnson, formerly supervisor of manual training in the schools of Cloquet, Minnesota, resigned to accept a position in the State Normal School at River Falls, Wisconsin. Mr. Johnson is succeeded in Cloquet by Frank L. Borrows, a graduate of the Michigan Agricultural College.

In Morristown, New Jersey, all grammar grade pupils have been removed to a single school, where work will be conducted on the departmental plan. This arrangement will be advantageous for the work in manual training, woodwork and printing, which will be established at once.

Changes have been made in the courses of study at three of the Massachusetts normal schools. The course for household arts teachers at the Framingham Normal has been made three years in length, as has the course for commercial teachers at the Salem Normal. At the Fitchburg Normal a class for training teachers of manual training has been organized, open only to men with some experience in industry.

Harold E. Everly, a graduate of Bradley Polytechnic Institute, and for one year a student at Teachers College, Columbia University, is now in charge of the woodworking in the government school of engineering at Porto Alegre, Brazil. This school has made such progress during the past few years that $6,000,000 has been set aside for its use. Already nine men have gone from the United States to this school, and nine men have been taken from Germany.

Manitowoc, Wisconsin, is planning to extend the work in the department of industrial arts. L. C. Dewey is the director, and teaches the mechanical drawing in the high school, eighth grades, day continuation and evening industrial schools. Wm. Segerstrom has charge of the high school shop. W. F. Weisend, principal of the Luling School, teaches academic branches in the continuation school, and assists in a grade center. Anton Sporer, foreman of the American

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FIELD NOTES

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Seating Company, has charge of night school shop work. Wm. Peterson, electrician for Wm. Rahr Sons Co., teaches a course in electricity in the night school. It is planned to establish a third manual training center in September and to engage an additional instructor.

Intermediate schools, made up entirely of seventh and eighth grade pupils, are being urged for New York City by Dr. F. P. Bachman, one of the Enquiry experts. These schools, he believes, would be more adaptable for manual training work, pre-vocational work, vocational guidance, and other progressive features, than the full eight-graded school. The matter is well worth investigating as a solution of the problem of the "two wasted years."

A commendable feature of the annual exhibition of manual training work at Nashua, New Hampshire, was the showing of a piece of work by each of the instructors, Ernest W. Beck and his assistant F. O. Fuller. Pupils, as a rule, work better for teachers who can "do things" in the line in question. A spirit of comradeship is also created by the teacher working with the pupils.

Virginia, Minnesota, has a new technical high school, with equipment valued at about $15,000.

Manual training will be introduced into the schools of Troy, New York, the coming year. The new subject will be begun in the sixth grade.

The board of education of Oradell, New Jersey, voted $500 for equipping a manual training department for next year.

A recent schedule of salaries received from Jersey City, New Jersey, gives as a minimum salary for the supervisor of manual training and domestic science $2000, and a maximum of $3000. The supervisor of drawing also receives $3000. Men instructors in manual arts in the grammar and primary grades receive a minimum salary of $1000, increasing to a maximum

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FIELD NOTES

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of $1700. Women instructors in the manual and domestic arts in the same grades receive a minimum of $600, and a maximum of $1300. The maximum salary may be reached in the eighth year of service.

S. F. Pelton, of Ardmore, Pennsylvania, was elected to fill the vacancy in the Atlantic City, New Jersey, Schools, in the manual training department. The vacancy occurred in March thru the death of G. W. Avery, who contracted blood poisoning as a result of an accident in the manual training shop.

The Philadelphia board of education has decided that a department of manual training should be established in that city. In this department, managed by a director of experience and foresight, all of the manual training work now done in the city may be unified and made more profitable, and in addition it will be possible to develop new work along lines of vocational training and guidance. The board has not yet selected a man for this responsible position as director, deeming it advisable to proceed slowly in order that the new department may be established on firm foundations.

Rooms for manual training and domestic science have been provided in new school buildings at Ellensburg, Prescott, and Hartford District in Washington.

A change of instructors was made in the manual training department at the Swampscott, Massachusetts, high school, in March. J. Maynard Chenney, of the Sloyd Training School, Boston, succeeded S. Perry Congdon, who is now a member of the Swampscott school committee.

READER'S GUIDE TO THE MAGAZINES

An Art Craft That Pays, Estelle Stinchfield, *School Arts Magazine,* Nov., p. 151. *

The Band-saw and the Saw-guide, John Scott, *Wood Craft,* Nov., p. 48. *

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Book Racks and Taborets, Ira S. Griffith, *American Carpenter & Builder,* Nov., p. 78. *

Bronzes from the Orient, *International Studio,* November, p. 4. *

Brussels: Lace Making, *International Studio,* Oct., p. 324. *

Composing Room Efficiency, A. E. Southworth, *Inland Printer,* Oct., p. 74. *

Construction of a Book Trough, Ira S. Griffith, *Furniture Mfg. & Artisan,* Oct., p. 476. *

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Design for Writing Desk, Ira S. Griffith, *Electrician and Mechanic,* September, p. 163. *

Early Practical Books on Printing Published in the U. S., R. A. Peddie, *Inland Printer,* Oct., p. 113.

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An Embroidery Exposition at the Musee Galliera, Paris, *International Studio,* Oct., p. 306. *

Hampton Institute Summer School for Teachers, W. A. Aery, *Southern Workman,* Sept., p. 519. *

Handwork and Its Relation to Dramatic History (Continued), George R. Chadwick, *Educational Handwork,* Sept., p. 161. *

The Hand Loom and Some of its Uses, Frank P. Lane, *School Arts Magazine,* Nov., p. 190. *

Knitting for Ten-Year-Olds, II, Anna J. Lamphier, *School Arts Magazine,* Oct., p. 122. *

Magazine Stand, Ira S. Griffith, *Furniture Mfr. & Artisan,* Sept., p. 449. *

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Methods of Finishing Hardwood, C. J. La Valle, *Furniture Mfr. & Artisan,* Sept., p. 426.

Modern German Embroidery, L. Deubner, *International Studio,* Nov., p. 39. *

Model Pump, C. H. Ince, *Educational Handwork,* Sept., p. 168. *

The National Competition of Schools of Art, 1912, Designs for Bookbinding, Metalwork, etc., *International Studio,* Oct., p. 298. *

A Notable Decorative Artist, George Sheringham, *International Studio,* Nov., p. 3. *

Notes on the London County Council Report on the Teaching of Handicraft, H. Holman, *Educational Handwork,* Oct., p. 173.

On Practical Art Teaching, *International Studio,* Nov., p. 86.

Our Playhouse and What it Did for us, Augusta E. Newbegin, *School Arts Magazine,* Nov., p. 155. *

Outline and Lining-in, George W. Eggers, *School Arts Magazine,* Nov., p. 196. *

Practical Gifts for the House, John D. Adams, *Woman's Home Companion,* Nov., p. 30. *

Preparation and Handling of Lumber for Woodworkers, *Wood Craft,* Nov., p. 49.

* Illustrated.

READER'S GUIDE TO THE MAGAZINES—CONTINUED

Principles of Outline Drawing, George W. Eggers, *School Arts Magazine,* Oct., p. 126. *

Proceedings, 9th Annual Convention, Illinois Manual Arts Association, Peoria, Feb., 1912:

- The Mission of the Manual Training Teacher, by F. M. Leavitt.
- The Illinois State Reformatory, by Judge Rolland A. Russell.
- To What Extent shall Vocational Education Influence Our Courses in the Manual Arts? by George H. Jensen.
- Report of Committee on Course of Study in the Manual Arts for Elementary and High Schools, C. A. Bennett, Chairman—Outlines of Courses in Manual Arts for Common Schools in Towns and Rural Districts, Woodworking in Rural Schools, Woodworking for High Schools, Mechanical Drawing, Metalworking, Freehand Drawing, Architectural Drawing, Bookbinding, Printing, etc.

Proceedings, 19th Annual Convention, Western Drawing and Manual Training Association, Cincinnati, May, 1912:

- Anarchism in Art Teaching, by Arthur W. Dow.
- Psychology of Commercial Art, by C. L. Watson.
- Interior Decoration, by Harold H. Brown.
- Picture Study, by M. Emma Roberts.
- Beauty in Ordinary Home Environment, by Mary S. Snow.
- Japanese Prints and their Service to Art Education, by Katharine M. Ball.
- The Pencil as a Medium of Expression, by A. Vandeline Henkel.
- Illustrative Drawing, by Elizabeth C. Buckley.
- Applied Design, by M. Emma Roberts.
- Suggested Method of Treatment for Beginning Design in Teaching Woodwork, by Ira S. Griffith.
- What should be Included in a Course of Instruction in Architectural Drawing for the High School, by A. C. Newell.
- Some Decorated Schoolrooms, by Sophie H. Harris.
- Furniture Selection, by Stella Skinner.
- Laboratory Analysis of Textile Fabrics, by Charlotte M. Gibbs.
- Art and Science in Relation to Home Economics, by Ruth A. Wardell.

A Social View of the High School, W. D. Lewis, *Saturday Evening Post,* Nov., 9, p. 16.

Textile Industries and Their Practical Application to Education, Jean Hutchinson, *Educational Bi-monthly,* Oct., p. 64. *

Things Children Prize, Amelia B. Sprague, *School Arts Magazine,* Oct., p. 95. *

Three Artistic Examples of Basketry, Margaret Rice, *Woman's Home Companion,* Nov., p. 32, *

Two Problems in Applied Geometry, R. J. Miner, *School Arts Magazine,* Oct., p. 113. *

Value of Punctuation, F. Horace Teall, *Inland Printer,* Oct., p. 82.

Venetian Crochet, Helen Marvin, *Woman's Home Companion,* Nov., p. 29. *

Wild Flowers in Design, Mary H. Fewsmith, *School Arts Magazine,* Oct., p. 78. *

A Working Library for the Supervisor of the Manual Arts, 1902, Elizabeth H Perry, *School Arts Magazine,* Oct., p. 132.

Worktables: Their Design and Construction, John Bovingdon, *Wood Craft,* Nov, p. 37. *

Use of Leather in Upholstering, Edward T. Harris, *Furniture Mfr. & Artisan,* p. 478. *

* Illustrated

FIELD NOTES

(Continued from p. XIX)

Three one-story frame buildings have been added to the manual training facilities of the Eugene, Oregon, schools.

The Placer County High School at Auburn, California, began the year with a new manual training building.

Domestic science and manual training are new departments in the Youngstown, Ohio, schools.

Modesto, California, now has a manual training department in the schools, including classes for high school and seventh and eighth grade pupils. Sidney Bovingdon, of Bellingham, Washington, was elected to take charge of the new department.

Park Rapids, Minnesota, has plans for a manual training building with an auditorium well under way. The structure will cost about $15,000.

The city council of Chicopee, Massachusetts, recently voted $1500 for the purchase of additional equipment for the manual training school, which is connected with the high school. Six iron-working lathes have been purchased. This makes twenty iron-working lathes, fourteen being already a part of the school equipment. There are also twelve wood-working lathes and a number of other machines. The pupils are at present engaged in making things needed in the shops. John V. Sullivan is director.

Statistics in Cleveland show that the establishment of technical and commercial high schools has caused 2,500 pupils to attend high school who would, in all probability, have otherwise left school. This is evident from the fact that the academic high schools have more pupils than before the establishment of the technical schools, thus making the enrolment in the latter a clear gain.

Manual training equipment has been installed in the schools of Livingston, Montana, and classes have entered into the new subject with enthusiasm.

Manual training classes have been started in the high school at Colorado Springs, Colorado. Mechanical drawing is being taught to all classes while waiting for the shop equipment. F. N. Landridge is in charge of the department.

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FIELD NOTES

(Continued from p. XXXI.)

The schools of Texas have already exhausted the $50,000 appropriation for state aid to schools establishing manual training, domestic science, or agricultural departments. The period which the appropriation was expected to cover is only two-thirds passed. Steps are being taken to have the appropriation renewed. It is evident that the value of these special subjects is recognized in Texas.

Grass Valley, California, introduced manual training into the school curriculum this fall.

Roseville has new departments of manual training and domestic science in the high and grammar schools. Miss Hazel Graham is the instructor.

Manual training is offered this year in Paducah, Kentucky, to high school and seventh and eighth grade students. The course is optional with the high school students.

TRADE NOTES

Whenever a new need arises in school equipments someone comes forward to supply it. A few years ago it was for a well-selected equipment of woodworking hand tools; now you can find plenty of such without difficulty. At the present time there is beginning to be a demand for school printing outfits. Several schools have been well equipped within the past two years thru the cooperation of schoolmen, printers and dealers in printers' supplies. Among the latter none have been more cordial or more helpful to teachers introducing the subject of printing than Barnhart Brothers and Spindler. They are furnishing real expert advice free of charge, because they believe in the future of printing as a school subject and because they are willing to risk a little effort now in expectation of future returns.

Disston Machine Knives is the title of a booklet recently issued by Henry Disston & Sons, of Philadelphia. It first points out that there are three important requisites in the production of good knives—good steel, good temper and good workmanship—and then gives evidence that all three of these go into the production of Disston knives. The steel is made in their own factory especially to meet conditions well known to them; the tempering is done by a method especially their own; and the work is done by skilled men, many of whom have been in the employ of the Disston company for years. The booklet illustrates many styles of planers, moulding, stave, veneer, shingle, spoke, paper trimmer and other knives.

The Peck, Stow & Wilcox Company of Southington, Conn., have issued a new catalog covering their line of machinists' hand tools. This is known as catalog 12B and is a very substantial book of 152 pages. It is conveniently arranged and well indexed. On looking it over one is impressed with the extent and variety of the P. S. & W. line.

The Orr & Lockett Co., of Chicago, announce a new patent locking bench that does not require master key. It is called their No. 155 "special."

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TRADE NOTES

(Continued from p. XXXVII)

The following has a good ring to it: "Put this plier to any test you want. Use it *all* the time. Cut every and anything in the wire line with it. We make them especially for hard usage, and we want you to subject them to the hardest usage you can." This is what Smith & Hemenway Co., of New York, say about their "Red Devil" pliers and they present you with a two year's guarantee bond decorated with Christmas holly.

The Educational Demonstrator is the name of a piece of school apparatus made by the B. K. Elliott Co., of Pittsburg, Pa. It is intended especially for illustrating the processes in mechanical drawing before a class. It can be used with the surface of the drawing paper in either a horizontal or a vertical position. An illustrated circular has been issued which describes it in detail.

If you are an art metal worker and have difficulty in finding just the supplies you want, and especially if you are making gifts for Christmas and need jewelry fittings, send for catalog No. 10, issued by The Thomas K. Lewis Co., 1534 North High St., Columbus, Ohio. This is a catalog of tools, supplies and special materials for craft-workers.

"Quality" is the word being emphasized by The Tannewitz Works, of Grand Rapids, Michigan, in their little condensed catalog of woodworking machinery.

The methods of teaching art advocated by Profesor Arthur W. Dow are admirably set forth in the second edition of his book, *Theory and Practice of Teaching Art,* published by Teachers College, Columbia University, N. Y. His discussion of *Line, Notan* and *Color,* which has attracted so much attention is found in the book entitled *Composition,* published by Doubleday, Page & Co., of New York.

BOOK NOTES

The School Arts Book has become *The School Arts Magazine.* In the process of change so many new features have been added that subscribers may not feel quite at home with it; some may be disappointed as they look upon it for the first time; they may feel that they have lost an old friend. All such feelings will soon wear off, however, when subscribers come to realize the number of new features that have been added, or promised, for the near future, and the added advantage of larger pages for illustrations. With Henry Turner Bailey still at the helm and the assistance of such experienced helpers as Walter Sargent, Fred H. Daniels, George W. Eggers, Harold Haven Brown, and many more, the new magazine ought surely to be a better friend than ever and a publication of wider influence.

Our English contemporary, *Manual Training,* also, is undergoing a change. As announced by us in April, H. Williams Smith has resigned the editorship. In his place is John Arrowsmith, head master of a school in Halifax, in which, according to Mr. Smith, discipline is "more fatherly and motherly than schoolmasterly" and in which manual training is given a large place. With him is associated, as business manager, J. W. Riley of the Technical School of Rochdale, a man of highest standing in the manual training fraternity and ample business experience. We are confident that as long as Mr. Riley is the business manager every detail of the subscription department will receive prompt attention. Both men are full of professional enthusiasm and both are putting vigorous work into the journal. Already an eight-page supplement for boys and girls, telling just how to make things, has been added. We shall look with confidence for a marked development during the coming year, as the result of their fine "team work." Americans may subscribe thru The Manual Arts Press if they wish to do so. The subscription price is 90 cents a year.

From far Australia comes the first number of a little four-page journal entitled *The Sloyder's Paper.* The initiator of this enterprise modestly signs his name, Teacher in Charge, Sloyd Center, State School 123, California Gully. We commend the professional spirit that seems to be behind this little paper.

A new edition of Crawshaw's *Problems in Furniture Making* is just off the press. This is very much revised and appears in board covers, though it retains the loose-leaf feature which has been found so convenient. It contains several new problems, and the text has been enlarged, rewritten in parts, and the type entirely reset. In its new form this popular book will do better service than ever before.

The new series of books on woodworking by Ira S. Griffith has evidently met a real need. The sale of *Correlated Courses in Woodwork and Mechanical Drawing* has passed the expectations of the publisher and the letters received make clear the fact that it will do a great service in helping teachers to organize their work in harmony with sound principles of pedagogy and the best practice among experts in the use of woodworking tools. The two books of projects present so much fresh material in such convenient form for immediate use as a part of the bench equipment that they have received a warm welcome. And as for *Essentials of Woodworking,* the first of the series, a large edition was exhausted in a few weeks in September, two and a half times as many being sold this year as last. The series is doing much toward setting a higher standard in both grade and high school work.

The latest addition to the books published by The Maunal Arts Press is a new textbook on *Descriptive Geometry* by Professor H. W. Miller of the University of Illinois. Any one who reads his article in this magazine, and the previous one published in June, will realize that Professor Miller takes advanced ground in the teaching of this subject. The method of his book has been used with marked success at the University of Illinois, where it has increased the efficiency of instruction from 85% to 97%. It is a remarkably simple, logical and practical textbook. It contains approximately 1,000 graphic problems for use in oral instruction. The book has recently been adopted by the Board of Education of Chicago for use in their two-year college course.

OUR APPROVED LIST
OF BOOKS ON THE MANUAL ARTS

ONLY such books as are recommended by the Editor of the MANUAL TRAINING MAGAZINE appear in this list, and the aim will be to keep in the list the best books on the subjects treated. For a more complete list see our catalog, "Books on the Manual Arts". This catalog lists and describes all of the standard and the best of the recent books. A copy will be sent free to any address on request.

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1. THEORY, PEDAGOGY, GENERAL.

Handwork Instruction for Boys. By ALWIN PABST. Our price, postpaid.......................... $1.00

A remarkably clear and stimulating book on the development and principles of manual training by the director of the training school for teachers in Leipsic, Germany. Translated by Bertha Reed Coffman.

Hand and Eye Training. By WOLDEMAR GOETZE. Our price, postpaid 1.50

An English translation of a notable German book on the history, principles and practice of manual training.

Economics of Manual Training. By LOUIS ROUILLION. Our price, postpaid.......................... 1.50

The only book treating comprehensively the cost of equipment and maintaining manual training schools.

Manual Arts for Vocational Ends. By FRED D. CRAWSHAW. Our price, postpaid.......................... .85

A strong and convincing plea for the development of the present school machinery to serve the ends of vocational education.

2. WORK FOR GIRLS.

Handicraft for Girls. By IDABELLE MCGLAUFLIN. Our price, postpaid 1.00

A handbook for teachers, detailing a five-years' course in sewing for girls in the public schools. Chapters on stitches, fibers and fabrics, cloth and cardboard construction, basketry, dress in its relation to art, and home furnishing. With many illustrations. An excellent book—thoroly practical.

A Sewing Course. By MARY SCHENCK WOOLMAN. Our price, postpaid 1.50

A course of study, description of stitches and instruction in methods of teaching by the head of the Domestic Arts Department, Teachers College, New York City. (Interleaved Edition, $3.50).

Educational Needlecraft. By MARGARET SWANSON and ANN MACBETH. Our price, postpaid.......................... 1.35

The best book yet produced combining art and needlework in school problems. A course of study illustrated with numerous line drawings, wash drawings and color plates.

Textiles and Clothing. By KATE HEINTZ WATSON. Our price, postpaid 1.50

About half of the book is given to the origin and methods of working textile materials, and the remainder to sewing and dressmaking. Richly illustrated, especially the part on textiles. A valuable textbook for high schools or reference book for teachers. (Textbook Edition, $1.25).

Elements of the Theory and Practice of Cookery. By MARY E. WILLIAMS and KATHARINE R. FISHER. Our price, postpaid 1.00

This book combines the features of a working guide for the kitchen laboratory with those of a handbook for study and reference.

H. WILLIAMS SMITH

[SEE EDITORIAL]

VOLUME XIV NUMBER 3

MANUAL TRAINING MAGAZINE

FEBRUARY, 1913

PRACTICAL ARTS AND VOCATIONAL GUIDANCE.

C. A. PROSSER.

IN spite of all the other excellent things which our public school system does for childhood, most boys and girls leave the portals of the schoolhouse to enter all kinds of wage earning occupations not only untrained but undirected as to what they ought to do in life.

More than 6,000,000 boys and girls between fourteen and eighteen years of age are employed in various ways in this country. This does not include the additional army of children in some of the southern states leaving school at the tender age of twelve. During the present year at least 2,000,000 more childish wage-earners upon reaching the age of fourteen will enter the ranks of industry. More than seven out of ten of this multitude did not finish the work of the elementary school. More than three out of four of them did not reach the eighth year of the schools and more than one out of two, the seventh year. Almost half of them had not completed the fifth grade work. Great numbers of them were barely able to meet the test for illiteracy necessary in order to secure working certificates which in most of the states is a test on the work of the fourth grade.

These children not only entered life deficient in the elementary school education which our day regards as being necessary to the civic intelligence and the vocational efficiency of everyone, but practically all of them had been trained by a formalized process in the things of the books alone, which gave them no opportunity to find what they would like to do and what they were best able to do in life. Practically all of them went to work without proper vocational guidance and direction. All of them found the doors of most of the skilled and desirable industries closed to them until they should become sixteen years of age.

Since they must work somewhere most of these childish wage-earners find their way largely by accident into low-grade skilled or unskilled occupations—the great child-employing industries and enterprises which are always wide open at the bottom to receive young workers but closed at the top so far as permanent desirable employment is concerned. Here, because their work lacks purpose and hope they drift about from one position to another, changing in some states, it is said, from one unskilled position to another on an average once every four months. The resulting moral degradation to the child and the tremendous cost to the employer due to this indifferent, unstable, fluctuating service cannot be estimated. For most of these children the years from fourteen to sixteen spent in wage-earning in store and shop and factory are wasted years, since they find themselves at sixteen in the same position as at fourteen—starting life without any adequate preparation for wage-earning. Their menial, monotonous, more or less automatic work not only gives no skill which will be useful to them in after years but also arrests rather than develops intelligence and ambition.

Out of the great army of children who leave the schools at fourteen to go to work and get from those schools no further attention, come the ne'er-do-wells, the loafers, the tramps, gamblers, prostitutes, and criminals for whose care the state spends more money in penal and correctional work than it would have cost to have prevented, thru proper vocational guidance and training, many of them from becoming a burden and menace to society.

In the absence of any work in the elementary schools which discovers the taste and ability of children, many pupils after receiving the graded school diploma elect the high school when it does not give the training which is best suited to their needs and to the kind of work they are to do in the world. They do this largely because they have not found themselves and have not come to realize either the kind of work which they are destined to do or the kind of training which would best prepare them for it.

SOME CHOICE INEVITABLE.

All boys and girls are, in the neighborhood of fourteen years of age, required to make a choice of some kind. They decide first of all whether they are to attend school or go to work. If they are to attend school they must decide what kind of school they are to enter. As vocational schools, or departments, are established to meet the needs of

those who are not destined for business and professional careers, every pupil ought, as the results of his previous training, to be in a position at fourteen years of age to make an intelligent choice of the occupation which he desires to follow or the kind of training which he wishes. This can only be done by some system of instruction in the upper grades of the elementary schools which will test pupils out by other things in addition to arithmetic, spelling, reading, writing, and other traditional subjects of a general education.

The results of our failure thru the schools to properly direct and train all the children of all the people for useful service are unmistakable. Misfits in all vocations confront us everywhere. Many workers are inefficient because they are not adapted to the work they are doing and some because they have not been properly prepared for it. This lack of efficiency constitutes a permanent handicap not only to the worker but to the calling which he follows. It means lessened wage, uncertain employment, failure of promotion, economic struggle, waste in the use of material, poor workmanship, reduced output, and the lowering of the standards of skill and workmanship of American industries.

We talk much today of the necessity of conserving our natural resources. Let us not forget that the richest asset which this country possesses is the practical and constructive ability of the children who sit in our schoolhouses today who are to be the workers and the leaders in industry of the future and whose talent and aptitude, whatever it may be, can only be uncovered by some system of training within the schools that will give it a chance for expression. Every consideration requires that every worker should have a chance to discover and to develop to the full all his possibilities, both for the good of himself and for the welfare of the social order. It is idle for us to talk much about conserving our natural resources until we have by a system of vocational guidance and training developed a type of intelligent skilled workmen in shop and home and farm who will so deal with the products of our soil and our mines as to eliminate waste and transform them into products of higher, and still higher value.

Above all, we must in some way secure a better adjustment of every worker to the calling in which he can work most successfully, in order that he may have the joy that comes from a sense of achievement, and experience the uplift that blesses every man who finds himself employed at a task in which he is interested and at which he is able to render a service creditable to himself and beneficial to his fellows.

Vocational guidance and vocational education are necessary in meeting the problem of fitting the great mass of our people for useful employment, each as the handmaiden of the other and each as indispensable to the success of the other. This paper will confine its attention largely to the question of how vocational guidance may be best given boys and girls at fourteen years of age.

Two things are necessary in any successful program of vocational guidance; a greater knowledge of the child than we have thus far obtained thru the work of the schools, and the close cooperation of other agencies with the schoolmaster in the attempt to give advice and counsel to the child as to his choice of a life work.

No vocational counselor, however competent and however devoted, will be able to deal with most children at fourteen years of age unless he knows more about their tasks and ability than the fact that they have made this or that per cent in spelling, reading, arithmetic, geography, history, and other public school subjects. Such a record may determine whether or not the child is destined for high school and for college; it does not at all reveal the other tendencies and capabilities of most pupils. It is equally true that the vocational counselor must learn, if he would be successful, how to secure in some way the active, helpful cooperation of laymen, drawn from many different walks and occupations of life, who will be able to give him and those children with whom he deals the benefit of the experience which they have had, and serve as big brothers and big sisters in the task of helping the adolescent boy and girl to find themselves.

IMPORTANCE OF ELEMENTARY SCHOOL PERIOD.

The greater knowledge of the child which we need to have in order to give vocational direction, is only to be obtained by some system of training within the schools between twelve and fourteen years of age which shall help us to find out what they would like to do and what they are best able to do.

Under the comparatively simple and primitive conditions of farm and village life of an earlier day, the experiences the child went thru in his environment on the farm and in the village uncovered his interests and his ability largely without the aid of the schoolroom. The little red schoolhouse on the hill still tested him in the things of the book; his environment tested him in the things of life.

The boy came in contact with a round of activities which were dis-

tinctively educative to him in the practical affairs of life. He followed the plow while his father sowed. On rainy days he tinkered with the farm machinery in the barn. When he was not able to repair it, he took it to the village hard by and helped, in a humble way, the artisan there to do his work. In the village he came into rather intimate contact with the work of the blacksmith, the wheelwright, the saddler, the carpenter, the shoemaker, and all the other skilled trades which the community afforded.

Out of this experience with the realities of things, certain undoubted benefits came to the boy. The experiences he went thru were distinctively educational to him. He learned to do many things by doing. He touched the realities which in themselves gave insight and power. There can be no doubt but that the success which the little red schoolhouse was able to obtain with its short term of school, its inadequate facilities, its poor teachers, measured by our modern standards, was largely due to the fact that the pupils came to the school with a background of life experience and a knowledge of the things which the book only photographed and symbolized, which inspired them in a short time and under unfavorable conditions to master the things of the book.

This experience was distinctly socializing. The boy came in an elementary way to understand the trials and difficulties and achievements, workmanship, and ideals of the artisan. No matter what he became in after life—the judge on the bench, a lawyer at the bar, a doctor driving lonely roads at night, a teacher in the schoolroom, an artisan following one of the trades which his community needed,—he carried into his life work a sympathetic understanding and appreciation of the work of his fellows that rendered him measurably more capable in his own and bound him and them together in a bond of appreciation and understanding.

Out of this work came a very sensible vocational guidance. The father and the boy and the neighborhood came to know what the boy was interested in and where his largest success would be made. With the doors of the trades opening up before him at the close of his elementary schooling, he was able to choose and to follow in content and with success the work for which he was best fitted.

It should be said by the way of passing that this elementary experience during his childhood days with the tools and processes of different occupations, particularly the one in which he became interested, gave him considerable elementary preparation and understanding of the work which he was to follow and was a distinct benefit to him in mastering

it in a more serious and thorogoing way when he came to his adolescent years.

It seems clear to all of us that under the conditions of modern life the opportunity of the boy to secure such real experience outside the school has, to a very great extent at least, disappeared. Trades have become factoryized. Large scale production has not only taken the ownership of tools from the worker but he has harnessed him as a machine-hand to one machine under the shop roof where he may serve all his days in carrying on one process making one small part of the finished output of the establishment. Seldom, if ever, does the boy of tender years have an opportunity to get beyond the factory gate to even witness the work which is being carried on beyond it.

Children have become herded together in great cities; the population is becoming more and more urban; children live huddled together in apartment houses; even playgrounds are difficult to secure. The school term has been lengthened from four months to ten and the pupils are being crammed and saturated with the things of the book, which at best are only photographs or summations of the life experience denied most of them. Of course, children do have life experience, but it is the experience of the superficial observer of the rapidly changing phenomena around them and not the kind with which in former days they had an opportuntiy to come into intimate contact and in which they were able to participate actively with brain and with hand.

All the arguments that are being used to-day to show the necessity of vocational direction and guidance for children facing the complexities of our modern industrial and commercial life point at the same time to the need of securing for children in some way the kind of life experience, before they become fourteen years of age, which will give some basis upon which they, and those guiding and directing them, may deal intelligently with the problem of placing them in proper schools, in giving them proper training, and in placing them in the callings of life for which they are best suited.

THE SCHOOL MUST FURNISH REAL LIFE EXPERIENCE.

If it be submitted that practical experience with the realities of things is a necessary part of the training of the child between twelve and fourteen years of age, and if it be admitted further that under modern conditions it is not possible for the child to secure this training as he should in his environment outside the school, then the duty and responsi-

bilitv rests upon the school as the agent of the state for the welfare of childhood to give it under the school roof.

There is a sense in which it may be truthfully said that to a very great extent in the past the result of the training of the elementary school, and of the high school as well, has been to select by elimination, closing the door from time to time by a system of tests and examinations against all those who were not able to respond successfully to the kind of studies that were being offered in the schools and to the demand upon the capacity of the child in dealing with abstractions. More and more, in our theory of the American public school system, we are swinging around to the idea that it is to be the mission of the schools in the future to select and to adjust boys and girls for life by having them undergo varied experiences in order to uncover their varied tastes and aptitudes and to direct and to train them in the avenues for which they display the most capacity.

Such a program as this would require a differentiation of the course of study for pupils between twelve and fourteen years of age. The amount of difference in the course of study for different kinds of pupils in any given school system would of course depend upon the size of the city, the extent of its resources, the size of the building, the number of different groups of pupils dealt with, and the size of each group.

POSSIBILITIES OF THE ELEMENTARY SCHOOL.

In a city of 50,000 people, the usual elementary school might well offer for the seventh and eighth years a high school preparatory course, a commercial course, a household arts course for girls, and a practical arts course for boys. All the pupils from these different groups could well take in the same classes, if necessary, the same work in English, history, civics, music, drawing, penmanship, physical training, which would occupy at least half of a lengthened day in the schoolroom. They would separate from each other for different work in the lines in which they were being tested.

Pupils in the high school preparatory course, who were in it because it was already determined that they were to go to high school and to college, could take courses in elementary algebra and in a foreign language. The elementary algebra would be as good, or better, training to meet the demands of the high school as any other course. The foreign language could be taken up at a time when the child was better prepared to deal with it. It is a well known fact that one of the great

difficulties in the teaching of foreign languages in the high schools is that pupils take them at a time when the language instinct is at an ebb rather than at the flow.

Pupils taking the commercial course would be those who were going out to commercial life at fourteen or going into the commercial department of the regular high school, or going out to the private commercial college, or intending after the regular high school course to fit themselves to enter business life. These should take in the differentiated work between twelve and fourteen, rich courses in the keeping of simple accounts, commercial arithmetic, commercial geography, and probably should be given some elementary experience in handling a typewriter. Such commercial arithmetic and geography is just as good as any which the schools have ever offered, and because it appeals to the interests of these pupils, is better than any other.

Girls taking the course in household arts between twelve and fourteen would be girls who were going out to the factory to spend, on the average, six years before taking up home-making in their homes, or who were going to the high school for a year or two and then going home to await marriage, or who expect to take the household arts training offered by the regular high school. These should have rich courses, in a lengthened day, in cooking, with the "how" and "why" of the work; sewing and hat trimming with the "how" and the "why"; sanitation and hygiene of the home; household decoration; and some little elementary experience in the problem of the care of the sick.

Boys wanting the training in practical arts would be boys who at fourteen were going to make a choice of some wage-earning occupation, or who were going to enter some industrial or trade school, or who were going to take the manual training work in a regular high school or enter a technical high school. These should have rich courses in the practical arts, with the "how" and the "why" of the process given whenever possible, industrial arithmetic, industrial geography, and elementary drawing closely related to the work which they were doing in the shop.

The high school claims that what it wants is trained minds rather than any particular content or book experience leading up to its work. If this be true, then any one of these courses is as good a preparation, at least for the general course in the high school, as any other course of instruction. Pupils taking any one of these courses who decide after graduating from the elementary school that they wished to attend the regular high school would be in as good a position as any other pupils to take its work. So far as the door of opportunity leading out to

the regular high school, they would not be injured, to say the least, by the kind of elementary school experience which they had received.

Nor is there any reason why between the ages of twelve and fourteen a flexible arrangement of the school program should not permit the pupils in any one of these courses to receive some experience in some of the other courses as a test of their interest and their capacity.

It goes almost without saying that after such an experience in the upper grades of the elementary school, boys and girls upon graduating would be in a position to face either some calling or further schooling much better prepared to make an intelligent choice of what they should do than they can be under the present school regime, under which most of them know only that they have or have not been able to respond unsuccessfully to the tests which have been set up in the academic work.

Where courses in the practical arts and in the household arts were offered in the seventh and eighth years of the work, the administration should be so flexible as to permit boys and girls twelve years of age, who were retarded in their work so that they had not reached the seventh year of the course, to receive the benefit of the instruction irrespective of the question of where they might be located in the graded schools. This training in the practical arts would probably be of more benefit to this kind of boys and girls than to any other. Practically all of them will leave school at fourteen years of age, or seek to enter an industrial school. They must make a choice of some wage-earning occupation. They need perhaps most of all to have such experience between twelve and fourteen years of age as will help them when they reach the period of compulsory education to make an intelligent choice of an ocupation. Every experience goes to show that these retarded boys and girls who were not able to measure up to the things of the book are able to learn by doing. When they are taught such subjects as spelling and arithmetic in connection with the work which they are doing with their hands, they are able to grasp them much better because they are being taught on the basis of the actual experience which they are receiving.

CONTENT OF WORK IN PRACTICAL ARTS FOR BOYS.

This paper will from this point direct its attention entirely to the question of training in the practical arts for boys between twelve and fourteen years of age. If this training in the practical arts is to help boys to find themselves in order that at fourteen they may make an

intelligent choice of their work for the future, it must be varied. A course in woodworking, excellent as it may be, only reveals whether or not the boy responds to it with his interest and aptitude. A course in metalworking alone will determine only whether or not he is adapted to that work. A course in printing alone shows whether or not he has any tendency toward the printer's trade. What we need is not a course in woodworking, or a course in metalworking, but an organization of training in the practical arts during the seventh and eighth years which will include experiences drawn from many different fields of employment, such as woodworking, metalworking, electrical working, printing, bookbinding, leather working, clay working, and gardening. These should not be known as courses at all, but should consist of a series of jobs, projects, enterprises, tasks—call them what you will—taken some from one field and some from another. The progress of the boy thru the school in a given year should be stated in terms of a series of experiences, some of them in wood, some in metal, some in printing, some in electrical work, etc.

The boy should follow these as a series of carefully graduated experiences, each one being taken up when as the result of his previous training he is able to deal with it. The work might be arranged so that he gave his time in the shop for a certain period, a month or so, to wood, then to metal, then to electrical work, then to printing, etc. It is believed, however, that the best results would be secured by having him assigned jobs from different fields rather indiscriminately, a job in metalworking following one in wood; a job in electrical work following one in printing. These shop tasks he should follow individually rather than as a member of a group. There is no reason why all the pupils in the class should be working upon the same kind of a job at the same time nor that they should be working upon different jobs from the same field of industry the same moment.

A course of training in the practical arts like that described above would require a varied rather than an extensive equipment. Instead of duplicating tools and machines so as to provide every pupil with a carpenter's bench, every pupil with a case of type, every pupil with a lathe, every pupil with a door bell and battery, just a few pieces of equipment necessary in order to give the boy experience in any occupation would be necessary, the pupils being taught individually and being shifted about so as to permit the varied equipment of the shop to keep them all busy at different tasks. The total cost of the equipment necessary to do this would certainly not be any more, and would proba-

bly be less, than that of the present method of duplicating pieces in order to teach pupils by the group method.

Some cities have some of their ward or elementary school buildings located near each other. Where this is true, it would be possible to secure varied experience in different practical arts for boys by having each one of these buildings devote its attention to arts or lines of employment different from that to which each of the other buildings gave its attention. By shifting the pupil for a portion of his day or year from one building to another, these buildings thru cooperation could secure training in various activities for the boys.

PROBLEMS CONFRONTING THE TEACHER.

If the interest and capacity of the boy is to be properly tested, the experience which he receives in the school shop should be made as *real* as possible. This means that the instructor in charge of the work should have at least some elementary knowledge of the industry dealt with. For the purpose of this prevocational training, he need not be a journeyman or master of the calling, but he should have a sufficient contact with it to be able to bring some of its atmosphere into the schoolroom. There are probably some excellent instructors in manual training for boys in this country to-day who are women, but the burden of proof rests upon him who proposes a woman as teacher of the practical arts for boys to show that she has had such experience and possesses such ability as to render her an exception to the general presumption that the teachers of this work should be men.

The work should be carried on as nearly like the actual shop as possible, otherwise the experience lacks reality. This does not at all mean that in the instruction an attempt should be made to reach shop standards of workmanship. In the earlier days, boys had an opportunity to tinker in an elementary way at different occupations. The work was valuable to them not because shop standards were reached but because they had an opportunity thru it to find out whether they responded to it. The aim of the work should not be large skill but life experience. Ideals of workmanship for the boys in the shop are good, and to some extent, necessary, but they should not be approached thru refined work on a few limited tasks to the point of defeating the larger aim of helping the boy to find himself.

At the best, it will be impossible for the school to make this work in practical arts so real as to present to the child the work as it is carried

on in the industry. Every place where the local community has the work, which is being done in the school, carried on in a shop or factory, arrangements should be made to have the boy visit the establishment and secure an opportunity under favorable conditions to see grown men carrying on the work on a large scale, which he is attempting to do as a boy would do it under the school roof. In this way the manufacturing establishments, shops and farms of the community would be made to cooperate with the school in bringing the boy into contact with the work of the world so that he might choose from it that which he is best adapted to pursue.

ACTIVITY MUST HAVE PRACTICAL OUTCOME.

Pupils should be taught individually rather than by the group method. The work should be put on a productive rather than on an exercise basis. The shop should make useful things to be utilized by the school or by the school system. Every experience goes to show that boys are much more interested in making things which are to be used in the school system, and thru which the boys are conscious of the fact that they are contributing something that is useful, than they are in making a tabouret for sister's parlor. Somewhere in the course there should be work done by the boy that smacks of the time element and approach of the shop outside. Where pupils make parts of things, all should get an experience some time of making parts and assembling those parts into the finished product.

The experience which the boy undergoes in the shop should be made educative for him. He should do there something more than merely use his hands. On every job which he performs every opportunity should be utilized for whatever drawing, arithmetic, spelling, and even composition work, will enable him to do the job better and to gain power in the use of related academic work.

NECESSARY MODIFICATION OF MANUAL TRAINING.

Such a program would not be a difficult or complicated one were it not so totally at variance with the present practice of the schools. The large results to be obtained from the work justify its introduction tho a more flexible administration of both academic and manual training work in the seventh and eighth years would be necessary. It seems certain that to carry out such a program more time would have to be given for manual training, or training in the practical arts, than at

present. This might be secured by the substitution of such work for other required subjects. It would probably be best secured by lengthening the school day. Advocates of the lengthened school day point out that if pupils gave half their time to actual work with their hands rather than close attention to books, a longer school day would not only not be burdensome but beneficial to them physically as well as otherwise. It is certain that if we are to accomplish anything worth while in working with the hands with children between twelve and fourteen years of age, we must give more time to the work in the program than the average of fifteen or twenty minutes per day which in most cases is alloted the practical work, thereby giving it the same importance in the curriculum as music and spelling. We need wider experience and training for the instructors. Woodworking and metalworking have been the only lines of training for which they have been prepared in our schools. They need not only preparation for different lines of work in the schools but a wider and more intimate contact with other lines of industry. In order to attract desirable teachers to the work who will be willing to make such preparation and secure such experience, there should be more salary for the capable. Above all, there needs to be in all quarters a greater recognition of the place and the value of training in the practical arts in the elementary schools, both for its educative benefit to the pupils and as an indispensable part of any successful attempt to give proper vocational guidance to the adolescent.

It is not denied that the program set out above raises some problems new in character, doubtless some that are difficult of solution from the administrative standpoint, which cannot be discussed in detail here. I have attempted to formulate some of these questions, as follows.

SOME QUESTIONS FOR SOLUTION.

1. Should all children of 12 to 14 years be required to take some training in the practical arts?
2. What difference in amount and kind should be made in the training as between those strongest in book work and those strongest in manual work?
3. Should this training in the practical arts be restricted to those who have reached the 7th grade at 12 years of age or should all children, even if they are retarded in their work, who need the work be given it?
4. How much experience in an industry or occupation should an instructor have in order to teach it as a part of prevocational training in the practical arts?
5. What changes should be made in the preparation of teachers of manual training in the practical arts as now given in order to fit them properly to carry

on such training as shall serve effectually as a part of a program of prevocational guidance and education?

6. How many teachers of practical arts in the upper grades of the elementary schools secure necessary experience in lines of industry or occupations with which they are expected to deal?

7. What should be the time allotment for training in the practical arts?

8. What are the kinds or types of jobs or experiences or enterprises from each of the practical arts, such as gardening, metalworking, woodworking, electrical working, printing, bookbinding, cement working, clay working, that the schools should give?

9. To what extent should the school add to the list of practical arts others carried on by the local community?

10. How can the instructors in the practical arts aid in giving proper vocational guidance and direction to the pupils?

11. What should the school authorities do with the output of the work in the practical arts?

12. What are the working programs for such training in the practical arts for those, 12 to 14 years of age, which seem best for typical or representative school units in cities and towns of varied and given populations?

13. Should the school day be lengthened in order to give the training, or can it be given in the present school day by substituting it for some work now required?

14. If proper time allotment is secured by substitution, in place of what other work should it be offered?

15. To what extent should this school training in the practical arts be supplemented by visits to places in the community where they are being practised commercially?

16. To what extent should the job or enterprise be used as the means, or center, or core of instruction of the boy in related arithmetic, drawing, English, geography, civics, etc.?

17. What would be the best equipment for a two-year course of training in the practical arts, for a group of twenty boys, in which the jobs or experiences of the pupil were drawn from a number of different occupations or employments?

18. From what practical arts should the experiences be drawn for a course of training as a basis for the vocational guidance of girls and what would be the best equipment for such a course in meeting the needs of a group of twenty girls?

19. To what extent, by cooperation between different elementary school buildings each equipped to give work in only one or two practical arts, could pupils be interchanged for a part of the day so as to give them varied experience in activities drawn from a number of different arts?

20. How may we best impress school authorities with the great educative as well as social and economic value of the right kind of work in the practical arts for children 12 to 14 years of age so that it may cease to be a mere appetizer for academic activities and be given its proper place and opportunity in the work of the school?

RECORD AND COST KEEPING IN SCHOOL SHOPS.

Foster F. Hillix.

I SHALL discuss briefly particular methods for the machine-shop altho they may be adapted to any shop with a few minor changes.

A system to be ideal should be simple, accurate, and as nearly automatic in its working as possible. To obtain simplicity, authorities seem to agree that cards or a combination of cards and forms are the proper materials to use. The cards should be printed and the information should be such that the student has but to fill in certain figures or other small data as the bulk of the information is printed on the card. In some cases the card can be so arranged that a check mark is all that is necessary to record a given condition.

To handle cards properly suitable racks should be provided, each being properly labeled to avoid the confusion which is caused when cards are out of place.

To promote accuracy the cards should have provision for entries at the close of each period so that the record will be made at the time and thus prevent the trusting to the memory. It is well to have the records on the cards cover but a short period of time so that the accuracy of the system will not be affected to a great extent if a card should be lost.

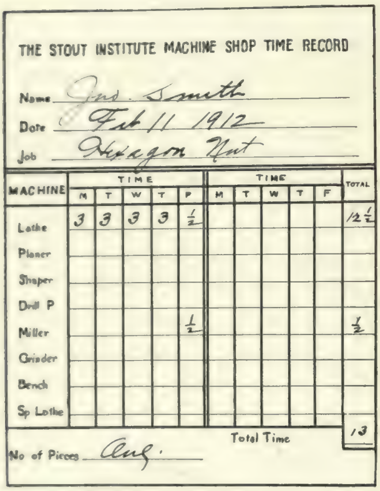
As an example, suppose we employ a time card for the exercise work. If we have a new card for each exercise, the student can generally replace it at the time, from memory in case a card is lost. If the card holds the record of the year, the loss of one near the end of the year is a serious matter.

In the machine-shop of the average school the records can be easily handled by providing a card for the time record, a card for the stock record, and an assignment board. The data should be transferred from the time card to a class or grade book when the work is graded. The stock cards can be filed under the name of the student in a suitable case in the toolroom and at any time the record should be complete to date.

THE TIME RECORD.

The time record, Fig. 1, should be brought to date at the close of each period by every student.

On the first line, after *Name,* the student enters his name; after *Date,* the date of the beginning of the exercise; after *Job,* the name of



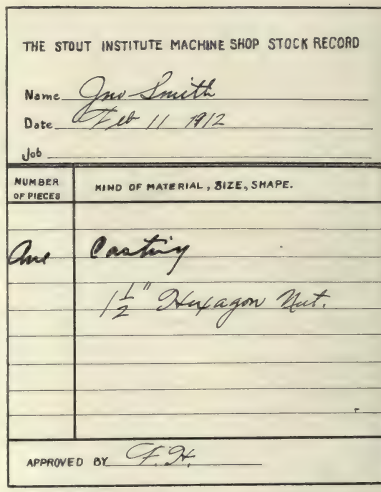
THE STOUT INSTITUTE MACHINE SHOP TIME RECORD

Name Jno. Smith
Date Feb 11 1912
Job Hexagon Nut

MACHINE	TIME M	T	W	T	F	TIME M	T	W	T	F	TOTAL
Lathe	3	3	3	3	½						12½
Planer											
Shaper											
Drill P											
Miller					½						½
Grinder											
Bench											
Sp Lathe											

No of Pieces One. Total Time 13

FIG. 1. THE TIME RECORD.



THE STOUT INSTITUTE MACHINE SHOP STOCK RECORD

Name Jno Smith
Date Feb 11 1912
Job

NUMBER OF PIECES	KIND OF MATERIAL, SIZE, SHAPE.
One	Casting
	1½" Hexagon Nut.

APPROVED BY F.H.

FIG. 2. THE STOCK RECORD.

the piece started. In the column under *Machine* will be found the names of the machines which are among the equipment. To the right will be found a column under *Time* which corresponds to the day of the week. At the extreme right is a *total* column. At the bottom of the card is to be found a place to enter the number of pieces and also the *Total Time.*

To handle the time cards two cases will be needed, one containing two pockets and labeled "New Time Cards" and "Finished Work" respectively. The other case, the individual card case, should be labeled with the name of the class or section number and should contain as many pockets as there are men in the section. This case is to hold the cards while the work is in progress.

THE STOCK RECORD CARDS.

The stock record cards, Fig. 2, should be of the same size as the time card, 4″ x 5″, but should be printed on a different colored stock.

At the top of the card will be found places for *Name, Date,* and *Job.* To the left is a column, *Number of Pieces.* To the right is a

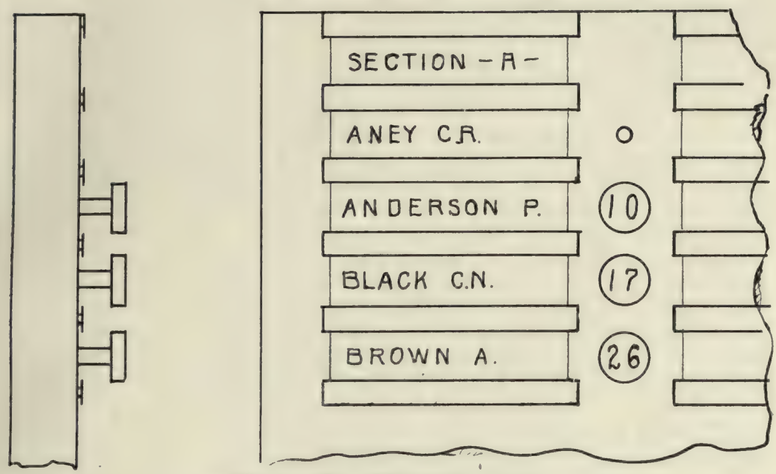


FIG. 3. THE ASSIGNMENT BOARD.

column *Kind of Material, Size,* etc. At the bottom is a line after *Approved By* for the signature of the instructor.

Two cases will be needed to handle these cards, one at the desk, labeled "New Stock Cards," and a filing case in the toolroom which should be large enough to hold about twenty cards under each name in the enrolment of all the classes.

The stock for the various exercises should be kept in the toolroom and issued only in exchange for a properly executed card.

THE ASSIGNMENT BOARD.

The purpose of the assignment board, Fig. 3, is twofold; first, it shows what machines are being used, and second, by whom they are used. Each piece of equipment should be marked with a number in a conspicuous place. A record is made on the assignment board by numbered pegs which fit in holes opposite the slides which are to receive

the cards. There should be as many slides as there are pupils in all the classes. It is advisable to have as many sets of pegs as classes, for the assignment often runs days at a time without changing entirely.

If the equipment is large, sixty or eighty pieces, and the enrolment large, two hundred or more, it may be advisable to run a demerit sheet which is posted once each week. On this sheet are posted the common irregularities with their demerit values together with the demerits for the week. This aids the student to remember to leave the equipment in proper shape.

To illustrate the working of the system, we will take up in their order the steps taken by a student in making a hexagon nut exercise.

The instructor assigns the exercise to the student and at the same time assigns him to a machine. This is done by putting the numbered peg which corresponds to the machine, in the hole in the assignment board by the student's name. The student gets the blue-print for the hexagon nut from the rack and he sees at once that he will need a casting of suitable size and shape. Then he goes to the desk and takes two cards, a stock card and a time card. The stock card he fills as follows: *Name,* John Smith; *Date,* February 11, 1912; *Job,* Hexagon Nut; *Number of Pieces,* One; *Kind of Stock, Size,* etc., Casting for 1½″ Hexagon Nut.

On the time card he makes the following entries: *Name,* John Smith; *Date,* February 11; *Job,* Hexagon Nut. This card is then placed in the unfinished work case until the end of the period.

The stock card is then approved by the instructor and the student draws the casting from the toolroom, leaving the card which is filed under his name.

The student then proceeds with his work. At the end of the period he enters the time on the time card in the proper place opposite the name of the machine in the column under the proper day.

At the beginning of the next period the student looks at the assignment board to find his assignment. In many cases the assignment is not changed until the student has completed all the lathe work. When the lathe work is completed, the student enters the total of the time put on the lathe work in the proper column and reports to the instructor for assignment to the milling-machine. This is done by changing the pegs as before.

At the conclusion of all the operations the student completes his time card, and puts it in the finished work case. He stamps his name

on the work and hands it in to the instructor for approval. If the work is satisfactory, new work is assigned at once.

The object of the assignment board is to enable the instructor to tell at all times who is responsible in each section for each machine. This enables him to place the blame for any unreported breakage, any

SCHOOL Stout				SEMESTER First				NAME Smith, Jno				DATE 11-12
EXERCISE	LATHE	PLANER	SHAPER	DRILL P	MILLER	GRINDER	BENCH	Sp LATHE	TOTAL TIME	NO OF PIECES	GRADE	REMARKS.
Hex Nut	$12\frac{1}{2}$				$\frac{1}{2}$				13	1	90	Thread poor
Gear Model	20		6	1	3		2	1	33	1	95	Finish poor.

FIG. 4. THE CLASS-BOOK.

neglect in proper cleaning or other irregularities. The instructor is also able to assign in advance the proper machine for each piece of work, when he is planning the work for the period. This avoids the delay at the beginning of the period of several men waiting to be assigned. This is a serious matter when the class is large. The instructor can always tell at a glance if he has any place for those who desire to do extra work.

THE CLASS-BOOK OR LEDGER.

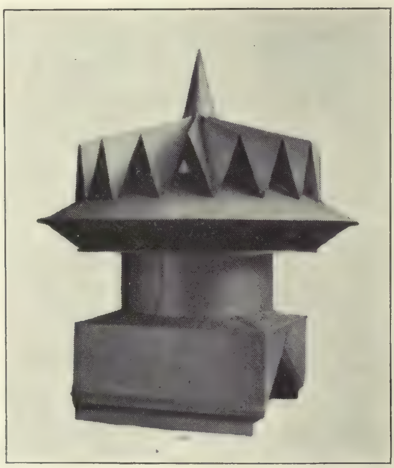
The data contained on the time cards should be entered in a class-book, using a form similar to that shown in Fig. 4.

The heading of the page has a place provided for the name of the school, where is entered the course the student is enrolled in, as Stout, Trade, High School, etc. After *Semester* is entered the semester or term. After *Name* is entered the name of the student; after *Date* the date as, 1911-12. In the first line is found the headings of the columns, the use of which is obvious. If the time is kept to the nearest one-fourth hour, the results should be sufficiently accurate.

A study of the pages of the ledger will enable the instructor to discover the following facts: The average time of the class on the lathe work of the hexagon nut exercise is ten hours. It is evident at

once that John Smith was below the class average on the lathe work. If his lathe work shows a low average for all the exercises, it will indicate that he needs assistance or additional practice in this subject to bring his work to the proper standard. A later investigation will generally locate the trouble so that it may be corrected. It is likely on some of the other work that John Smith is above the average. This fact is also immediately seen.

The time put on each operation on each machine is recorded and this makes it easy to organize the work for each student so that he gets a well balanced experience. The instructor can at any time tell the exact condition of each of the men in his classes, and assign the work so that each student gets practice in the particular phase of the subject which is most in need of development to round out his experience and make him equally efficient in all branches of the work.



SHEET-METAL WORK DONE BY BOYS AT THE STATE REFORMATORY, PONTIAC, ILLINOIS.

THE PRESENT STATUS OF VOCATIONAL SUBJECTS IN THE HIGH SCHOOLS OF CALIFORNIA.

E. E. LEWIS.

THE latest general revision of secondary education is manifesting itself in at least two important ways. First, by the establishment of secondary schools of a special character, variously called mechanical, polytechnic, manual training, commercial, agricultural, domestic art, and industrial high schools. This movement began about the year 1880 with the organization of manual training and commercial high schools. It marks the beginning of schools of secondary rank of a vocational character.

The second way in which secondary education is being revised may be described as internal rather than external. The old classical curriculum of the high school is gradually being forced to accept on a par with itself the new vocational subjects. In other words, the revision takes the form of changing the subject matter rather than setting up a new kind of school. This manner of changing and revising high school education has been practiced from the very beginning of such schools, and has recently assumed such proportions as to challenge the thoughtful attention of every one interested in secondary education.

The term vocational, as used in this paper, is the broadest possible term that can be used to described several forms of new subject matter, such as industrial, commercial, domestic, professional, agricultural, mechanical, etc. In other words, vocational subject matter is any and all subject matter which more *directly* prepares for efficiency in a craft, business, or profession. This definition does not aim at finality, yet affords a basis for the classification of subjects as they appear in the high school curriculum.

In the state of California there are about one hundred and ninety joint union district, county, and city high schools. The data for this paper was secured by H. C. Greenwood, a former graduate student in the Department of Education of Stanford University, California.[1] Mr. Greenwood sent out a general letter to the principals of all the high schools of the state, asking for the names of the vocational subjects, the

[1] This paper is taken almost in toto from Mr. Greenwood's data, and the writer makes the proper acknowledgment here. The data seemed too valuable to be lost in the file of student reports.

number of teachers in the school, and the enrolment of the school. By continued correspondence and by consulting the printed courses of study and the reports of county and city superintendents a fairly complete investigation was made possible. Returns were secured from 165 different high schools in the state.

From those returns it appears that the following vocational subjects are to be found quite generally in the curricula of California secondary schools: geometrical drawing, mechanical drawing, bookkeeping, shorthand and typewriting, commercial history, geography and law, woodwork, domestic science, forge-work, machine-shopwork, foundry work, and architectural drawing. These eleven subjects are recognized as suitable for entrance by Stanford University and a few of them by the University of California.

In addition to these there are five subjects that have not as yet won university recognition, namely, commercial arithmetic, advanced shorthand and typewriting, commercial English, penmanship and spelling, advanced bookkeeping and commercial correspondence. The following 27 subjects also appear tho they are not yet recognized by the universities as worthy of entrance credit, as many of them are taught in but one school, while none of them is present in more than two. They are: mechanics, strength of materials, application of heat and electricity, electricity and its practical applications, pattern-making, cabinet-making, carpentry, wood-carving, sewing, machine drawing, graphic statics, minerology, assaying, surveying, clay modeling, brick-laying, plumbing, plant propagation, poultry raising, horticulture, dairying, soils and fertilizers, animal husbandry, irrigation, agricultural chemistry, farm building drawing. Taking each of these subjects in order we find their present status in the high schools of California to be as follows:

GEOMETRICAL DRAWING.

The subject known as geometrical drawing occupies the first place as to numerical importance on the list of vocational subjects, which are common in the schools considered. While it is not as broad and rich a subject as are some of the others on the vocational list, it has been taken up more extensively by the secondary schools than any other subject of a vocational character. The principal reason for its prominence is, I think, that it has been required by the University of California for several years for entrance into the Engineering Colleges. This subject in comparison with other vocational subjects is also much

cheaper to introduce. There were 122 high schools, or 74 per cent of the total number in the state replying to the inquiry, offering geometrical drawing. These schools have an enrolment of 24,565 students, or 87 per cent of the total enrolment of all the schools, with a force of 1,148 teachers, or 81 per cent of the total force.

MECHANICAL DRAWING.

Second and almost equally popular among the vocational subjects is mechanical drawing, which is taught in 121, or 73.8 per cent, of the high schools considered, with a student enrolment of 24,446, or 86 per cent, and a teaching force of 1,141, or 80 per cent. Geometrical and mechanical drawing are usually taught in one course or in separate courses in the same schools.

BOOKKEEPING.

Instruction in bookkeeping was offered in 106, or in 64 per cent, of the 165 California secondary schools considered, and in these schools there were 16,919 students, or 60 per cent, with a teaching force of 845, or 59 per cent of the entire force. In the majority of these schools bookkeeping is elective.

SHORTHAND AND TYPEWRITING.

Together these really separate subjects occupy the fourth place in the number of schools giving it, as 58 per cent of all the schools considered gave courses in this subject. There were 12,682, or 45 per cent, of the high school students of the state in these schools, and 631, or 44 per cent, of the total teaching force. This subject is more popular with the smaller high schools than with the larger ones, and the subject is elective.

COMMERCIAL HISTORY, GEOGRAPHY, AND LAW.

This combination of studies occupies the fifth place in importance in the number of schools providing instruction in them. It is taught in 81, or 49 per cent, of the schools considered, and these schools have an enrolment of 13,233, or 54 per cent of the students, and a force of 704 or 49 per cent of the teachers. It will be seen by comparing the percentage of schools offering the subject with the percentage of the total enrolment that the schools teaching it are far above the average in

size. The increasing popularity of this combination of subjects is best indicated by the fact that there was an increase in number of schools teaching it in 1908-9 over those offering it in 1907-8 of 21, or 13 per cent.

WOODWORK.

This subject occupies the sixth place in importance in the list of vocational subjects common in the 165 high schools considered. There were 25 schools teaching woodwork, or 15 per cent of the total number considered. These schools have an enrolment of 8,521 students, or 30 per cent of the total, and a teaching force of 376, or 27 per cent of the teaching body. By comparison it will be readily seen that the schools offering woodwork are far above the average in size. This subject is elective except in strictly manual arts schools, where of course it is required.

DOMESTIC SCIENCE.

The subject that has the honor of seventh place on the list of common vocational subjects in 165 high schools considered is the comparatively new subject known as domestic science. Domestic science was taught in 23, or 14 per cent, of the schools last year. These schools had a total enrolment of 8,745 students, or 31 per cent of the enrolment in all the 165 schools under consideration. Nine high schools added the subject to their curriculum in the last year. This is evidence of its popularity.

FORGE-WORK.

Forge-work, like several other subjects of a mechanical or manual nature, is not very wide spread because, in all but the larger schools, the equipment is too expensive. Eleven high schools offered this subject; these schools have 18 per cent of the students and 15 per cent of the teachers.

MACHINE-SHOPWORK.

Machine-shopwork is another subject that requires an equipment of considerable value, and also a special instructor. Because of these two reasons it is not surprising to find it is not a common subject. It was offered in 7 of the best equipped schools of the state, and has produced good results in each. These seven schools are far above the average in enrolment so that the subject is of greater importance than the number of schools giving it would indicate.

FOUNDRY WORK.

Owing to the lack of equipment, many of the secondary schools of this state which would otherwise teach foundry practice are unable to do so. Nevertheless, this subject occupies the tenth place as to numerical importance, among the vocational subjects. It is found in six schools, or 4 per cent, with 14 per cent of the entire enrolment and 9 per cent of the teaching force.

ARCHITECTURAL DRAWING.

This subject has not been recognized as one suitable for secondary school instruction except for the past two years, and has not therefor, been taken up by many schools. It is taught in 6 schools only, and is eleventh in numerical importance.

Of these 11 subjects recognized by the University the most prevalent and best established are the drawing and the commercial branches. There is both an economic and a historical reason for this. Commercial and drawing branches have been longer organized; again, the cost of equipment is slight in comparison to the cost in the manual branches.

The following five vocational subjects seem to figure somewhat in the curricula of many of the secondary schools of California. They are commercial arithmetic, shorthand and typewriting—in advance of the unit credit recognized by the university; the combination course made up of English, penmanship, and spelling; bookkeeping, in advance of one entrance unit recognized by Stanford; and commercial correspondence.

Commercial arithmetic was taught in 10 schools during the year 1908-9; advanced shorthand and typewriting, in 10 schools; commercial English, penmanship, and spelling, in 9 schools; advanced bookkeeping, in 7 schools; and commercial correspondence, in 3 schools.

PERCENTAGE OF SCHOOLS OFFERING VOCATIONAL SUBJECTS.

During the year there were 24 schools offering no vocational subjects, or only 14.5 per cent of the total number of schools considered.

37	schools whose curricula were from	1	to	5	per cent vocational
21	schools whose curricula were from	5	to	10	per cent vocational
44	schools whose curricula were from	10	to	15	per cent vocational
23	schools whose curricula were from	15	to	20	per cent vocational
10	schools whose curricula were from	20	to	25	per cent vocational
6	schools whose curricula were from	25	to	46	per cent vocational

These figures are computed on the basis of year subject. For example, say a certain school gives four years work, or 4 units of Latin, and 3 units of Greek, 4 of English, 3 of mathematics, 2 units of bookkeeping, 1 of geometrical drawing, we would have 17 years of work. Of this, 14 years or units would be non-vocational in nature, leaving 3 years for units of vocational work. The course would be 82 per cent non-vocational, and 18 per cent vocational. The median high school has a curriculum that is from 10 to 15 per cent vocational.

SIGNIFICANCE OF THESE FACTS.

It seems to me that these facts indicate a distinct vocational educational tendency in secondary education in the state of California. The so-called cultural high schools are beginning to absorb this new educational material. They are beginning to respond to the demands made upon them by industrial and economic interests. It is significant that as many as eight units in vocational subjects may be submitted for entrance to the universities of the states. The universities are also beginning to respond to the demands, and are trying to make the vocational road easier for the high schools by giving due credit to vocational work in their entrance requirements. The predominance of commercial and drawing branches may indicate how, in the introduction of this new work, high schools are following the line of "least cost", as equipment for these courses is less expensive than for many other vocational subjects. It should be remembered, however, that manual training and domestic science are finding a place in a high percentage of California high schools in spite of the financial hindrance to their introduction. Possibly the most significant fact brought out by this is the fact that agricultural subjects are chiefly conspicuous by their absence. This is a sad reflection upon the secondary schools of California in view of the state's great agricultural interests and resources.

ROOMS IN PAPER.

PROBLEMS IN CONSTRUCTION AND DESIGN.[1]

V.

NAMA A. LATHE AND ESTHER SZOLD.

ORIGINAL DESIGN OF DOORS AND DRAWERS.

THE choice of the arrangement of door and drawer spaces for such furniture as buffets, dressers, and desks presents a fundamental problem in design in a concrete form. Even young boys and girls realize the necessity, in this case, for limitation to horizontal and vertical divisions within the rectangle. This problem of proportion of rectangles to each other and to the enclosing rectangle is the basis of design in the building arts and may be traced in such masterpieces as Giotto's tower, Ghiberti's gates, the cathedral of Notre Dame in Paris, and in the most desirable modern buildings. In the magazines one may find pictures of many excellent designs for judgment and comparison.

The design for the drawer faces and doors must aim not only at good space relations; the arrangement must also be consistent with strength; the size and shape of the parts must be governed by their use, and this, in turn, governs their position. Fig. 29 shows examples of spacings for the front of a buffet, which conform to the conditions imposed.

The drawer-pulls are small round-headed brass paper fasteners. The spacing of these must be considered and experimented with when planning the spacing of the front. Time can be saved by marking their position accurately before the plan of the facings is cut into separate pieces. They may not be placed so near the sides of the drawers that their shanks will have no room to spread.

The effect of moldings and panelings may be added by planning well proportioned borders within the shapes and penciling the lines of these heavily to show thru the stain. See Fig. 29(A).

Several trials should be made, sketching freehand. The most promising suggestion may be sketched on the front of the frame or on another piece of construction paper of the same size and shape. When the spacing is determined, rule the lines accurately. If the plan has

been made on a separate piece of paper, the drawer and door faces may be cut out directly from this, guide marks placed on the frame, and the facings glued in place.

If, in making a piece of furniture, the main emphasis is placed upon its design, fitting it with drawers is unimportant. The construction of

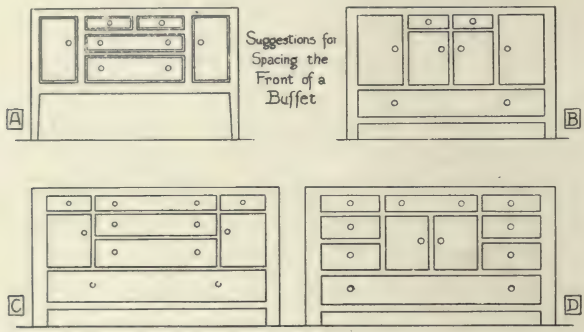


FIG. 29.

a model having many drawers would involve a rather futile expenditure of time. If, on the other hand, the mechanics of the problem is deemed more desirable, the design may wisely be kept simple. Self-reliant and rapid workers would be quite happy in the privilege of making drawers for their pieces during the intervals which they would otherwise spend in waiting for the plodding body of the class to catch up. And there is a satisfaction in making a piece "that works." The slower members of the class may be limited to using merely the facings for drawers and doors.

CALCULATION FOR ORIGINAL DRAWER CONSTRUCTIONS.

Drawer features are planned in the following general order: Design the spacing. Rule the lines for the openings $\frac{1}{16}''$ to $\frac{1}{8}''$ within these spaces. The drawers themselves must be $\frac{1}{16}''$ less in width and height than the openings. The depth of the drawer from front to back must be less than the depth of the piece of furniture in order to permit the facings to be flat against the front of the frame.

The original designs for the side panels of the buffet, which support the upper shelf may deal with the outline of the shape or with the openings, or both. The paper-cutting method suggested for the design

for chair-backs may be used here. If desired, the shelf may be omitted and the upper portion of the buffet otherwise treated.

BUFFET.

See Figs. 30, 30A, and 31.

ORDER OF STEPS IN CONSTRUCTION.

Designs:—The spacing of the drawers and doors and of the panels at the top of the side sections of the frame may be original if desired. The design decided upon may then be carried out following either of the two constructions outlined below.

Draw the pattern after the method indicated in previous models.

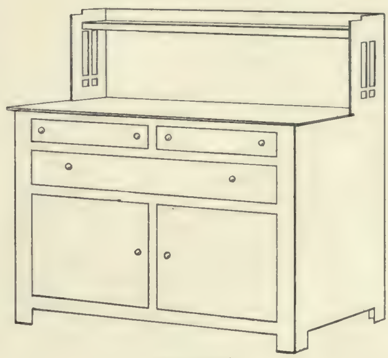


FIG. 30A.

Construction, Omitting Drawers:—The effect of drawers and doors can be successfully shown by simply pasting the drawer facings and doors to the front of the frame, as indicated in Figs. 30 and 30A, without making the actual drawers.

Draw the pattern of the frame, Fig. 30, omitting the heavy lines of the drawers and door openings and all the pairs of pasting lines on the side sections.

Score, cut, and fold.

Pasting:—Double forward the vertical laps along the inner edges of the panels at the top of the side sections. Paste against the adjoining strip.

Put fine pinpricks thru the frame just inside the corners of the rectangles drawn for the drawer and door facings.

Turn the frame right face up.

Paste the facings to the right side of the frame with their corners just covering the pinpricks.

Mark where the pulls are to be inserted.

Prick pinholes thru the front at these points.

Paste the side laps of the top section of the front to the side sections on the level of line X.

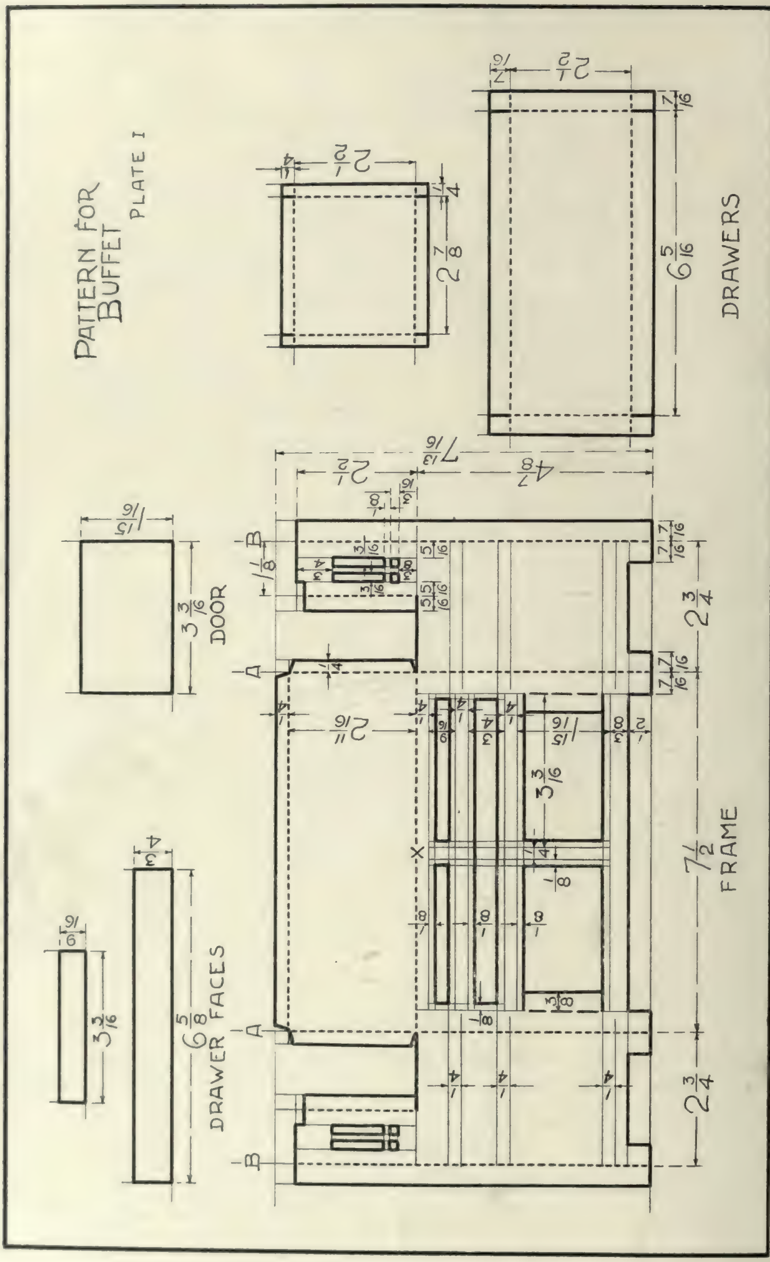


FIG. 30.

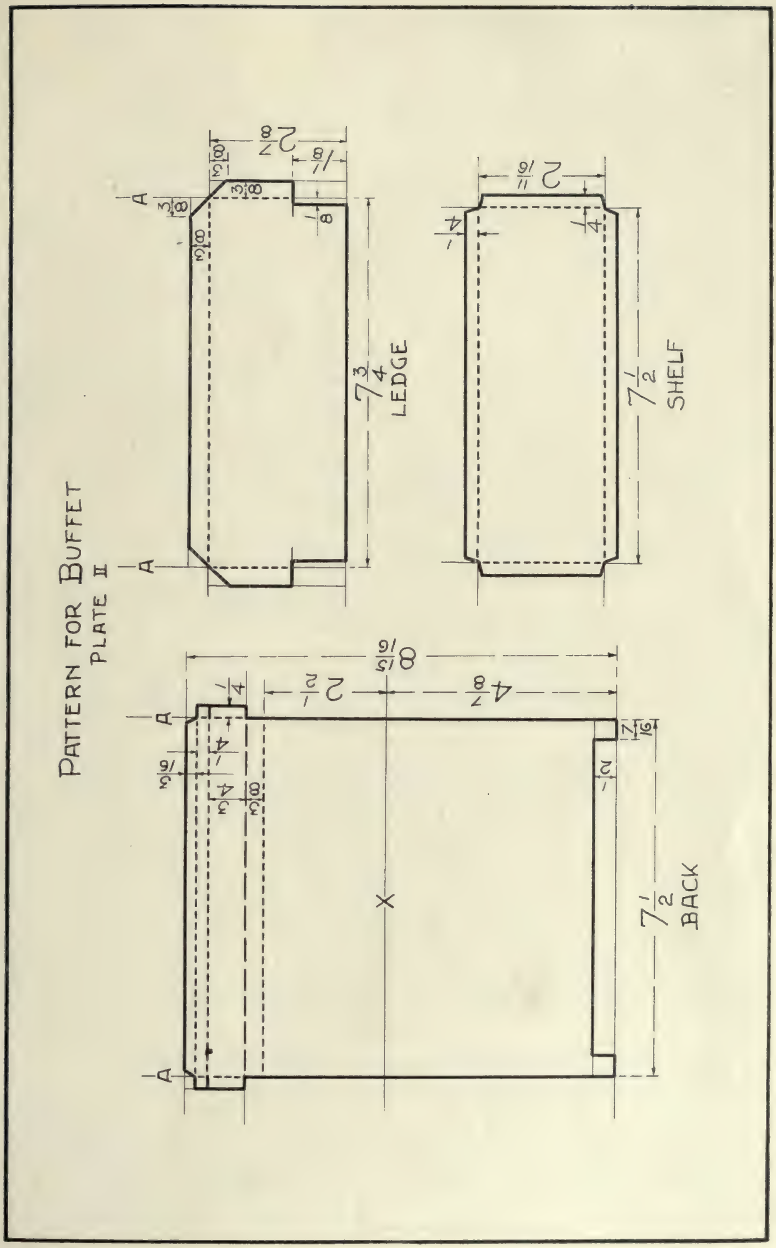


FIG. 31.

Read directions for forming the back and the ledge under *Features Common to Both Constructions.*

The Back:—Fit the back to the frame and mark as directed. Remove the back.

Spread glue along the long horizontal lap at the back of the frame.

Replace the back and lay the buffet on its back.

Put the hand up into the frame and press the lap in place.

Paste the ends of the top shelf in place.

Paste the long vertical laps over the back.

Ledge:—Fit the ledge to the frame as directed.

Paste in place.

Stain the buffet.

Insert the drawer and door pulls and clamp them on the inside.

Shelf:—One shelf like the pattern in Fig. 31 is needed to brace the frame at the bottom.

Turn the buffet on its back.

Spread glue on one of the long laps of the shelf.

Paste this lap along the bottom edge of the inner face of the back. The lap should turn downward.

Press until dry, but avoid pushing the loose edge of the shelf upinto the frame during this operation.

Spread glue just inside the base of the other three sides of the frame.

Push the shelf cautiously into place. Press the laps against the glued sections.

Construction with drawers and hinged doors:—Draw the pattern of the frame as shown complete in Fig. 30.

When locating the three pairs of pasting lines shown in the side sections of the frame note that the upper lines of each pair are continuations of the lower lines of the openings of the front.

Score, cut, and fold as indicated.

Pasting:—Double forward the vertical laps along the inner edges of the panels at the top of the side sections. Paste against the adjoining strip.

Turn the frame right face up.

Paste the doors on the $\frac{3}{8}''$ lap left for that purpose.

See that the back edges of the doors come exactly to the crease of the lap and that $\frac{1}{8}''$ of the doors extends above and below the openings.

Shelves:—Three shelves like the one in Fig. 31 are needed to serve as supports for the drawers and as a base for the cupboard below.

Turn the frame right face down.

Paste a long lap of one shelf to the inside of the front on a level with the lower edge of the highest drawer openings. The lap of the shelf should turn downward. Note the position of the top pair of pasting lines shown on the side sections of the frame.

Paste the remaining shelves in the same relation to the remaining openings, the bottom shelf last.

For strength at the door fastenings paste a $\frac{1}{2}''$ strip of paper on the inside of the vertical strip between the doors.

Note the directions for pasting the shelves of the book-case and follow the same method in pasting the shelves and the top section of the front of the buffet to one side section. A pencil or ruler may be found helpful in pressing the laps into place.

Do not paste the long vertical laps at the back of the frame to the shelves.

For pasting the shelves to the second side section it may be found better to spread glue quickly between all the pairs of pasting lines and under line X at once and push the laps of the shelves against the paths of glue.

Read directions for forming the back and the ledge under *Features Common to Both Constructions.*

The Back:—Fit the back to the frame and mark as directed.

Remove the back.

Spread glue quickly along all the horizontal laps at the back of the frame.

Replace the back.

Lay the buffet on its back and press the laps into place with a ruler or pencil inserted thru the drawer and door openings.

Paste the ends of the top shelf in place.

Paste the long vertical laps over the back.

Ledge:—Fit the ledge to the frame as directed.

Glue in place.

Drawers:—Mark on the drawer faces where the pulls are to be inserted. Prick to preserve the marks.

Paste the drawers into shape.

Lay, right face down, the drawer face corresponding to one of the drawers.

Adjust the proper side of the drawer against this, taking care that the margins of the projecting face are even. Mark with a pencil the position of the drawer on the face.

Spread glue on the side of the drawer and paste in place.

Repeat with the remaining drawers.

Stain the buffet and drawer faces.

Prick pinholes thru the drawer fronts at the points for the pulls. Insert the pulls and clamp on the inside.

Place the "door knobs" so that by turning the head on the outside the spreading shanks on the inside can be made to fasten the door shut by slipping under the central strip of the front.

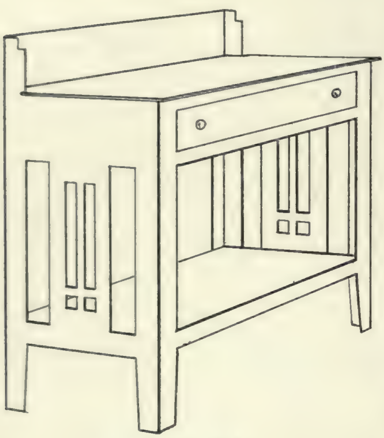


FIG. 32A.

If the knob does not turn readily use the spreading shanks as a handle to turn until the movement is free.

Features Common to Both Constructions.

The Back:—See Figs. 31 and 30A. Double forward the $\frac{3}{16}''$ strip at the top of the pattern of the back and paste it against the $\frac{1}{4}''$ strip adjoining it.

The folding line marking the lower edge of the $\frac{3}{8}''$ strip of the drawing falls at the top of the pattern of the back; if this is folded as indicated, and $\frac{3}{8}''$ below the top, a $\frac{3}{4}''$ shelf will project forward.

Spread glue all along the $\frac{3}{8}''$ strip, double it forward, and paste to the section below it.

Paste the square laps under the short strips at the ends of the shelf.

Mirror:—A "mirror" of silver paper may form an attractive feature under the shelf. If one is to be added, measure now on the back for it. Allow for a suitable margin of "wood" all around the "mirror" but do not glue the latter in place until the buffet is completed and stained.

Adjusting Back to the Frame:—Turn the pasted frame to face you.

Place the back against it, allowing the long vertical laps at the sides of the frame to fold outside of the back.

Line X of the back is the pasting line for the broad level top of the frame.

Holding the buffet in this position, note and mark the places where the ends of the narrow shelf should be placed on the side panels.

Proceed as directed under the separate constructions above.

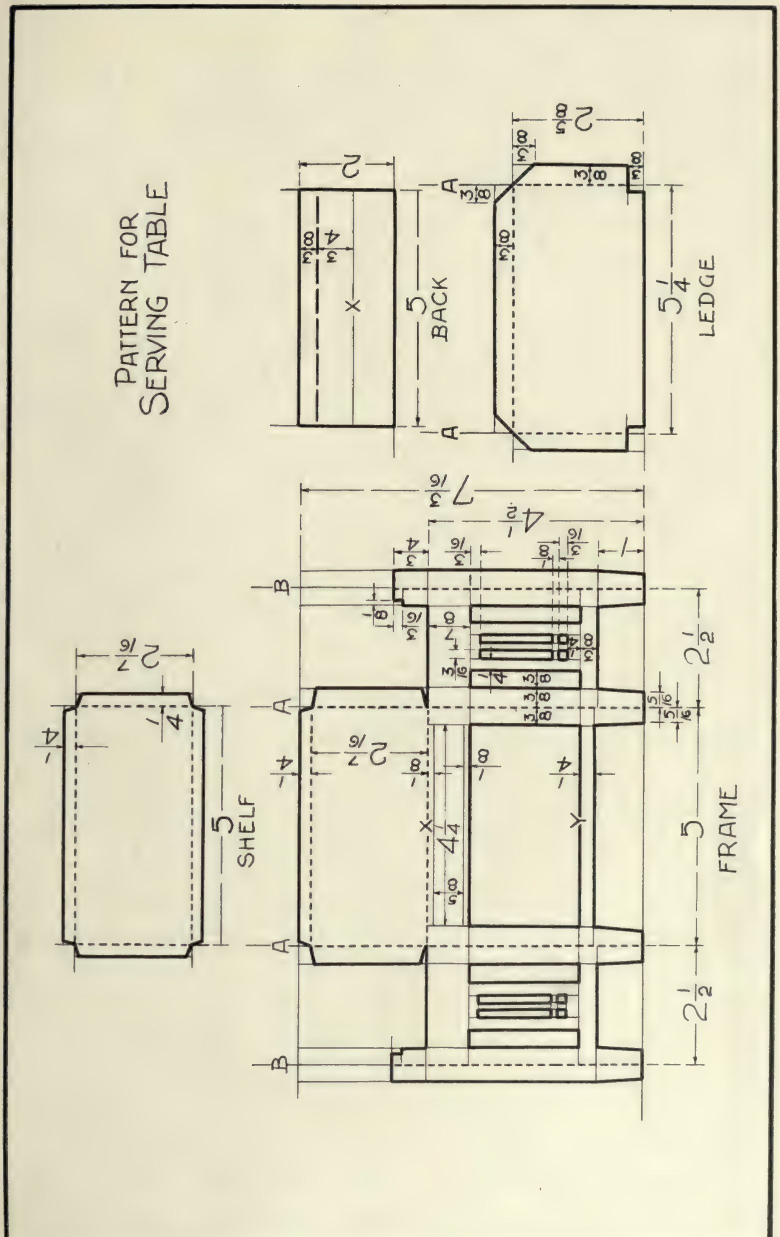


FIG. 32.

The Ledge:—Double forward the $\frac{3}{8}''$ laps of the ledge and glue in place.

The ledge should fit the top of the buffet, with the doubled edges projecting slightly at the open part of the sides and at the front.

The Legs:—The strength of the legs is greatly increased by folding strips of paper and glueing them into the angles from the lowest shelf down.

THE SERVING TABLE.

See Figs. 32 and 32A.

Follow the order of construction indicated in previous patterns—especially the buffet. The panels at the ends of the table may be either omitted or original in design.

Special Features:—If a drawer is desired, rule lines for the opening on the front rail $\frac{1}{8}''$ inside the lines of the rectangle indicating the size of the drawer facing.

Cut out the inner rectangle.

Plan the bottom of the drawer $\frac{1}{16}''$ less in width than the width of the opening, and at least $\frac{1}{8}''$ less in depth than the depth of the table.

Plan the rim around the bottom of the drawer $\frac{1}{16}''$ less than the height of the opening. Compare the proportions of the drawers of the buffet with their openings.

Cut the drawer face the exact size of the rectangle drawn for it.

A shelf is added at the level of the low horizontal braces between the legs.

For a model with a drawer a second shelf is needed to support the drawer. This is glued at the level of the lower edge of the drawer opening.

In pasting the top section of the front and the shelves into the frame, and in other operations, follow the order of construction described under *Construction with Drawers* for the buffet.

Double over and paste in place the $\frac{3}{8}''$ strip at the top of the back pattern before pasting the back in place.

Line X of the back falls on a level with line X of the frame.

(*To be continued.*)

WHAT THE MANUFACTURER SHOULD EXPECT OF THE MANUAL TRAINING SCHOOL GRADUATE.

WILSON H. HENDERSON.

IN the October number of *"The Furniture Manufacturer and Artisan,"* a manufacturer raises a question regarding manual training schools. He cites a case of an educational institute in a village near New York City that started a night class of forty boys in woodworking and cabinet-making. Of the forty, nine stayed thru the entire course of three years, but not one had the idea of continuing in the trade. He uses this to show that boys of the present generation do not want to earn their living in the trades. The following is quoted from the article:

> The teaching of the child by the parent is always done with the many wrongs they seem to feel in mind. They have passed thru many hardships, and the point of view they take of the question is directly opposite to that of the seeker of intelligent labor who, they seem to think, wants the boy to learn a trade so as to be able to exploit him to the employer's advantage. No; their child is not going to learn a trade; employers' sons will become professional men—lawyers, doctors, etc. You do not see rich men's sons learning trades with which to make a living. They do not have to. Most of the fathers did not earn what they have by day's pay. They made it by their brain.......
>
> Education has made the boys think and observe what is going on around them, and when they see the older members of another generation who have been at the bench all their lives, and figure out what the reward and recompense has been, their ambitions run in a direction opposite thereto. They want to get out of the factory into a higher social scale and secure a financial return earned by mental labor without the manual labor. Education having done its work, the others are in the ruck we who have to hire help get into. Now, if they have not the mind to see that education would have prevented them from working for us, how are we going to do it by education?
>
> Education and manual training together are not going to succeed unless the plain education—"book learning"—does. The best we have of the old-time mechanics of the old school, and the loss of which is the real reason of our worry, had no education. Most of them hardly knew how to add.

We are all more or less slaves of tradition, and tradition has taught us that the white collar is an emblem of aristocracy and that overalls mean servitude. The manual training schools must break away from this tradition as they have from educational tradition and they are rapidly doing so. They are teaching the rising generation that only that knowledge that can be applied is power. No one knows better

than a school teacher that "book knowledge" does not mean easy money. Every city has hundreds of young men working in offices at from $40 to $60 a month, while men in the shops with less training are working for $90 to $125 a month. The man in the office pays more for his clothes and gets less for his work. To be sure he wears a white collar but he has to pay the laundry bill. The pathetic attempts of young professional men to keep up an air of prosperity are proverbial. I am very well acquainted with two young attorneys whose combined receipts for three months were less than $100. To be sure they always wore white collars and had creases in their trousers. That is part of the game. If they had been real busy they would not have had the time to press their trousers every morning. One of them finally went to work as a bridge carpenter at $120 a month. The other is still struggling along collecting rents, etc.

The statement that rich men's sons are all entering the professions is not correct. The son of the Governor-elect of Illinois is a steam fitter. A very prominent State Superintendent of Schools stated to me that he would like to have his son learn a trade. More than one millionaire's son is working in the shops. Good business men know that they can hire lawyers easier than they can get competent foremen, machinists, or even kitchen help.

A certain large manufacturing concern recently sent its superintendent to Detroit with orders to hire 100 machinists from the automobile works. His orders were not to pay more than necessary but to get the men. In that same town they could have employed a car load of clerks in a half-day at their own price. A printing establishment in the same city is advertising for printers and will bear the moving expenses and pay them $100 a month. They could get a train load of school teachers with that offer.

The one thing that is in demand is skill. Knowledge alone is not worth much and neither is physical strength, but the knowlegde of how best to use the physical strength is the high-priced article. A physician can tell me that I have appendicitis and will gladly do so for two dollars, but the man who can operate on me and cure the ailment will charge me $200.

Apparently the manufacturer is afraid that the manual training schools are going to prevent his getting competent help. It seems to me to be an indictment of any establishment to say that an educated man would not work in it. If that is the case, the sooner such a concern finds itself without help, the better.

The real producer of all wealth is the laborer. The man who makes his living with his brain (I do not mean by his wits), does so by organizing or directing productive effort. The leader is the man with the greatest power or ability to organize and direct, but he alone does not produce anything. The greatest manufacturing concerns are recognizing the fact that their engineers and mechanics are just as essential to their existence as their board of directors

Manufacturers could learn one lesson from the manual training schools and that is that the best way to get good work, both in quality and quantity, is to enlist the interest of the worker. No person will do his best when he can see nothing beyond the operation in hand. One large commercial establishment has solved its labor problem in this way: A savings association is operated in connection with the business, and each employee is urged to put a part of each week's pay into stock in the savings association. When stock in the savings association matures it may be exchanged for stock in the company. This stock receives its semi-annual dividends the same as other stock. In this way every employee becomes vitally interested in the welfare of the business. He speaks of the company as "we" instead of "they" which makes a world of difference. There has never been a strike or a walk-out in this establishment since it adopted this policy. That it pays is demonstrated by the corporation's paying 14 per cent dividends on fifty million dollars of stock.

The manual training school graduate will not fit into the place of the "old-time mechanic of the old school" who "had no education" and "hardly knew how to add." Why should he? Our compulsory education laws were made to stop the production of such men. Our schools are adjusting themselves to modern conditions and the factories will have to do likewise.

METALWORK WITH INEXPENSIVE EQUIPMENT FOR GRAMMAR AND HIGH SCHOOLS. XI.[1]

ARTHUR F. PAYNE.

IN the last article of this series the method of making a seamed vase was described. That method of "plain seaming" is perfectly satisfactory for a vase that does not have to have its general shape changed very much from the lines that it had when it was seamed. But that method of seaming would not work satisfactorily with the vase in the first illustration, shown herewith, because the top and bottom has been hammered out so far that if it had been made with a plain seam, the seam would certainly have broken.

To avoid that serious difficulty we must make use of a slightly different kind of a seam. This type of seaming was known among the old English metalworkers by the name of "cramp seaming." On every piece of genuine old English metalwork, and on kettles particularly, one can readily find the characteristic zig-zag mark of this seam. On the vase in the second illustration the seam has been soldered with silver solder, and is easily distinguished.

This kind of seam is readily understood and is easily made, the method being as follows: After the pattern has been developed, and the metal cut out, as described in the last article, a line must be drawn with compass or dividers parallel to each edge of the seam. These two lines must be drawn on opposite sides of the piece of metal, and may vary from $\frac{1}{4}''$ to $\frac{3}{4}''$ from the edge of the metal, depending, of course, upon the size of the vase. Then, with a coarse flat file thin down the edge to the line that was drawn parallel to the edge. The foregoing directions are illustrated at *1* in the drawing. The thickness of the metal is much exaggerated so as to show more easily the way in which the edge must be filed down. The next step is to lay off along the entire length of one edge spaces about $\frac{1}{2}''$ apart, and with a pair of shears cut down to the line that was drawn parallel to the edge. The next step is to bend each alternate piece of metal up and the other piece down. Bend them with a pair of pilers just enough to allow the other edge to slip in between when it is bent around, thus

bringing the edges of the seam together. These directions are illustrated in the sketch at *2*. The next step is to bend the metal around so that the two edges are together, and slip the edge that has been filed thin but not cut between the small pieces or "cramps" that have been bent up and down. Hold the edges firmly together and place the vase over a round stake and with a raw hide or a wooden mallet hammer the cramps down. Next bind the edges together with wire as illustrated

VASE WITH "CRAMPED" SEAM. THIS VASE COULD NOT HAVE BEEN MADE BY THE METHOD OF "PLAIN SEAMING".

"CRAMPED" SEAM VASE READY FOR SHAPING.

and described in the last article, and solder with silver solder as described in the issue of April, 1912. The vase is now ready for shaping and fluting.

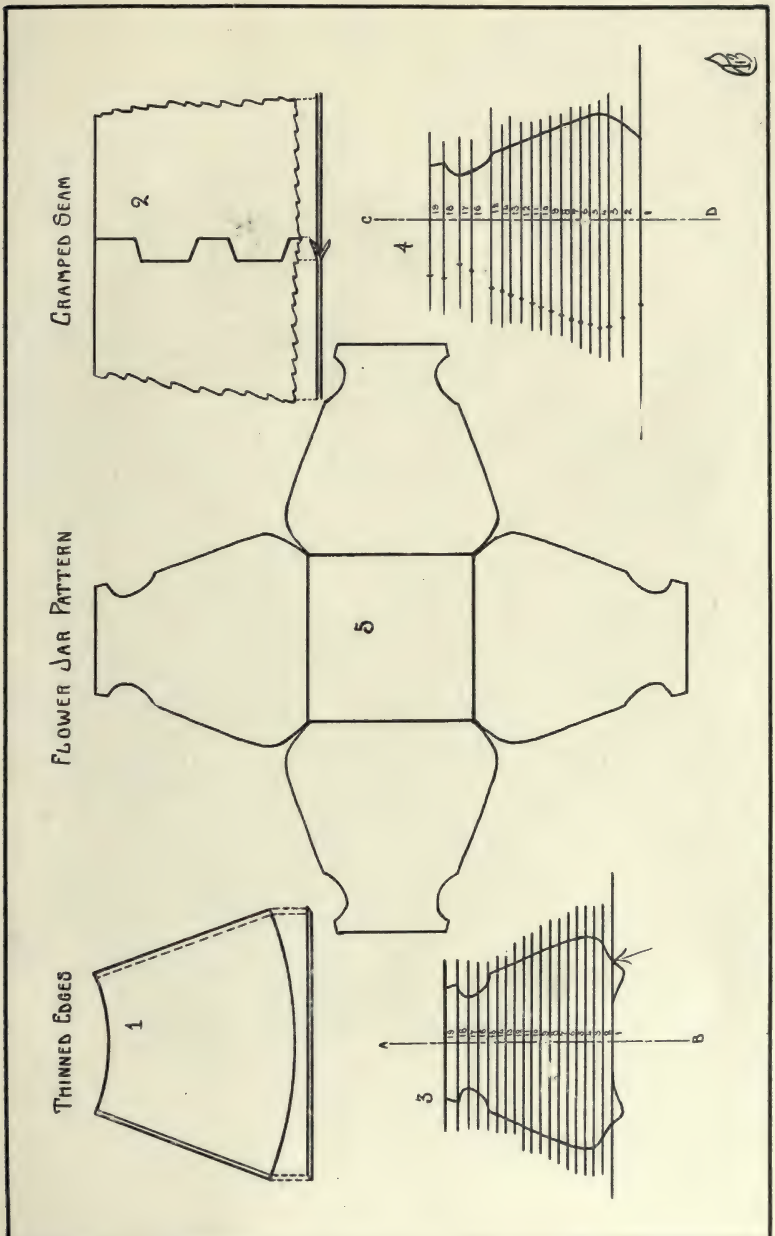
The extent to which this kind of seam can be beaten out is shown in the third picture of the vase. The vase is 14″ high and, as shown

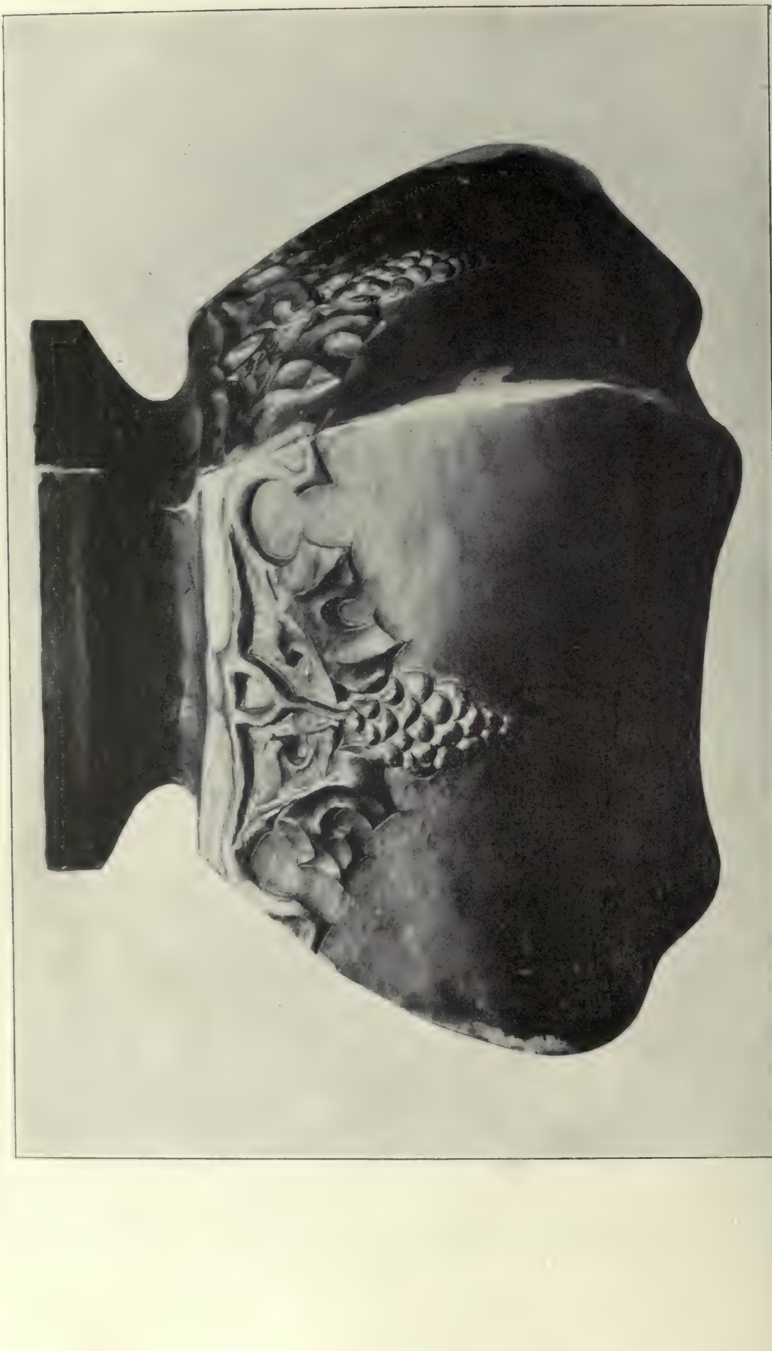
in the second photograph, the bottom measured $4\frac{3}{4}''$ across; as shown in the third photograph, the bottom has been hammered and stretched out until it measured $7\frac{3}{4}''$ across. The vase was fluted in the same manner as shown for nut-bowls, and the bottom was "lapped" on as shown for candlestick bases, earlier in the series. To make the bottom water tight the bottom edge of the vase was coated with soft solder applied with a soldering iron. Then the bottom was "lapped" on and finally the lapped seam was held in the flame of a bunsen burner melting the solder and making the vase water tight. The vase was then polished with emery cloth, colored dark with the potassium sulphide solution, the finish was relieved with emery cloth, and finally the vase was given two coats of wax.

SHOWING EXTENT TO WHICH A CRAMPED SEAM WILL STRETCH.

There is one other method of making a shape that cannot be made by any of the six methods previously described, and that is the method used in making the flower jar shown in the fourth illustration. This piece is square, with sharp corners, and it would be very difficult, if not impossible, to make it by any of the previously described methods. So a pattern is developed from a drawing, and laid out on a flat piece of metal; the metal is cut to the pattern, the four sides are bent to the shape of the original drawing, and the corners are soldered together with silver solder. The white silver solder may be seen on the corners of the jar as the jar was not polished or colored when the picture was taken.

The details of this method of pattern development are as follows: First, draw an accurate full size outline of the desired shape, as shown at *3* in the sketch, and draw the center line *A B*. Carefully divide the center line into $\frac{1}{4}''$ spaces with the pencil dividers, and draw lines clear across the drawing on the $\frac{1}{4}''$ points. Ignore the feet as they can easily be beaten out when the shape is finished. Starting at the bottom, number the lines *1, 2, 3,* etc., as shown in the sketch. Next, draw a new center line *C D,* as at *4*. With the pencil dividers carefully measure the distance on sketch *3* from the point where the line *1* intersects the outline (where the arrow mark is) to the point where line No. *2* intersects the outline. Lay this distance off on the new center line *C D,* and number the points *1* and *2,* respectively. Continue with the


CRAMPED SEAM
FLOWER JAR PATTERN
THINNED EDGES
1
2
3
4
5
A
B
C
D



FLOWER VASE SEAMED AT CORNERS, "CHASED" DECORATION.

remainder of the points, remembering always to measure the distance on the outside line of sketch No. *3* and to lay it off on the center line *C D* of the sketch No. *4*, being sure to number them as you lay them off. This work must be done accurately or your vase will not be the shape desired. When the transference of points is completed you will have on the new center line the same number of points that you did on the old center line but they will not be equally spaced. The next step is to place one leg of the dividers at the point where the center line and line No. *1* intersect on the No. *3* sketch, and measure the distance to where the same line intersects the outside line (where the arrow mark is). Lay this distance off on both sides on line No. *1* on the No. *4* sketch. Do the same thing with all the other lines, and you will have a series of points the same as on the left side of the No. *4* sketch. Connect these points, as on the right side, and you will have a pattern of one side that when bent to shape will be the shape and size of the original sketch. With a piece of transparent tracing paper copy the outline of the pattern of the side, and then lay off a square the size of the bottom of the flower jar and transfer the pattern of the side to each of the four sides of the square bottom, as shown in sketch No. *5*, and you will have a completed pattern of the flower jar.

CHASED COPPER PLATE, SHOWING AN APPLICATION OF THE METHOD OF BEATING DOWN THE BACKGROUND WITH THE PLANISHER CHASING TOOLS.

Stick the pattern on to a flat piece of 18 B & S gage copper, or transfer it to the copper with carbon paper, and cut or saw the metal to the same shape as the pattern. Carefully file the edges to the cor-

CHASED BLOTTER, IN WHICH THE BACKGROUND WAS BEATEN DOWN FROM THE FRONT, AND ALSO THE DESIGN BEATEN UP FROM THE BACK.

rect shape and also file them to a bevel so that they will fit together at the corners. Bend each side upward, and inward until the corners come together, then solder with silver solder the four corners as far as they fit together, then bend each side upward and inward a little more and solder again, continuing this process until the top is reached. Remember to keep the seams clean and free from dirt or grease of any kind; it is best to cover the entire length of each seam with borax, which will keep it clean, and also protect it from oxidation.

FRIST PROCESSES IN CHASING. THE RIGHT HAND SIDE SHOWS THE STUDENT'S FIRST ATTEMPT.

After it has been "pickled" and cleaned, if it is to be left plain it is ready for "planishing." In such a complicated shape it will probably be advisable to fill it with pitch and planish the metal smooth on the pitch after it has become hard. This method of planishing was described in the last article of the series.

REPOUSSE AND CHASING ON PITCH.

Repoussé and chasing are synonymous terms for the same kind of work and process. Repoussé is the French term, and chasing and chased work are the English terms. As the term chasing is that which is in common use in the trade, and in the supply catalogs the tools are designated as chasing tools, it seems best in this series to use that term.

In the issue of June, 1911, instructions were given for the most elementary method of chasing, that is, chasing on a piece of soft wood

instead of pitch. Chasing is sculpture in metal, it is the fine art of metalworking, it is the making of bas reliefs in metal, and it requires training and ability to see and think in three dimensions. Saw piercing and engraving require only two dimensions, length and breadth; chasing requires the third, thickness.

SILVER CUP, FLAT CHASING, SHOWING THE EXTENT TO WHICH SIMPLE CHASING MAY BE CARRIED.

An explanation of the technical processes of chasing is very simple and is easily understood. The metal with the design drawn on it is embedded in chaser's pitch, and the design is outlined with a chisel-like tool called a "tracer". The metal is then removed from the pitch, placed face downward on a piece of soft wood, and the raised parts of the design are beaten up from the back. The metal is then "annealed" and placed back in the pitch. The design is then modelled into shape with the proper tools.

The chasing tools used are made of tool steel $\frac{1}{8}''$ or $\frac{3}{16}''$ square and $4''$ long. A well selected set of 50 chasing tools may be bought from a dealer in such tools for \$7.50. But it would be just as well for a

beginner to buy a straight and a curved tracer, a large and a small planisher, learn to use them, and make the others as he needs them. When making them, after they have been filed to shape they must be hardened by heating the points red hot and plunging in cold water, and then polished bright with emery cloth and tempered by slowly

CHASED FLOWER JAR, "TRACED AND SNARLED". THIS PHOTOGRAPH SHOWS THE PRELIMINARY STEPS IN THE WORK, WHICH IS SHOWN COMPLETED ON PAGE 252.

heating them to a dark straw color and again plunging into water. Chasing tools may be roughly divided into four large divisions: tracers, straight and curved, that are used to make lines; planishers, of numerous shapes and sizes, used to beat down the background and for modelling; matts, similiar in shape to the planishers, but with matted or grained surfaces which are transferred to the metal when the tools are used; beads, rosettes, and special tools that are not of any great value to the beginner. A box of chaser's tools is shown in the illustration.

Chaser's pitch is made of equal parts Burgundy pitch and plaster of Paris melted together. To every 5 pounds of combined pitch and plaster add a piece of tallow the size of an English walnut. Melt the pitch first, and slowly add the plaster, stirring it in as you add it to the pitch.

For large flat pieces the pitch may be poured into a square cake tin, or an ordinary bread tin. For small fine work it is better to use the round pitch block and ring that is shown in the illustration. A cheap pitch block can be made from an ordinary pudding pan about 6″ or 8″ in diameter. The bottom should be beaten out round so that it will set firmly in the ring and be readily turned and tilted when necessary.

CHASED FLOWER JAR, BACKGROUND BEATEN DOWN. A LATER STAGE IN THE PROCESS.

A chaser's ring is a ring that holds the pitch block in position while the piece is being chased. A very satisfactory one may be made by taking a piece of copper 2″ wide and about 20″ long and riveting or soldering the ends together so as to form a circle. Then wind around this ring strips of cloth until the pitch block fits in snug and tight, as is shown in the illustration.

After the design is drawn or transferred onto the metal, the edges of the metal should be turned under with a pair of pliers, and then placed on top of the pitch and warmed with the flame of the blowpipe or bunsen burner. The heated metal will slowly sink into the pitch. Care must be taken that the metal is not too hot, as it is likely to sink in too far. When the metal is cold start to chase the

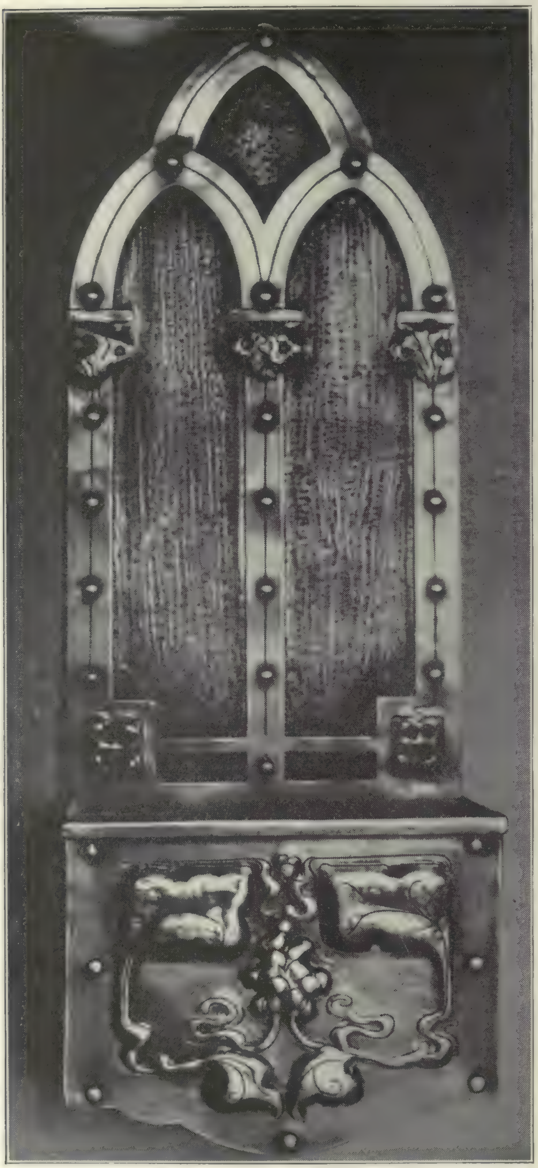
CHASING ON PITCH. PITCH BLOCK, CHASER'S RING, TOOLS, AND METHOD OF HOLDING TOOL.

outline with the tracers. Be careful to hold the tool in the position as shown in the photograph, have the fourth and third fingers resting on the metal, the second and first fingers and the thumb holding the tool. Do not hold the tool perfectly straight, but tilt the top slightly away from the direction in which you want to move.

The first attempt at tracing will almost surely be a failure, but after an hour's practice control will be acquired. The right-hand side of the illustration on page 254 shows a student's first attempt at tracing. The next illustration, a silver prize cup, shows the extent to which simple tracing can be carried. The left-hand side of the preceding figure shows the next step which is beating down the background with the planisher chasing tools. This is sometimes done instead of beating up the design from the back. An application of this method is shown in the illustration of a chased copper plate. But in the case of the blotter both methods were used. After the planishing of the background, the metal was removed from the pitch by warming it slightly and lifting it out with a piece of wire. It was then annealed, and the design beaten up from the back on a soft piece of wood, set back in the pitch, and modelled to form with the small planishers. If the design is beaten up very high it will be necessary to fill the high places with pitch before setting back in the pitch pan, as the air is likely to become enclosed in the high places and the metal will sink when an attempt is made to chase it.

"RECESS" CHASING. COPPER VASE.

The chasing on the flower jar, shown on page 252, is also a student's first attempt at chasing. The accompanying illustrations show the

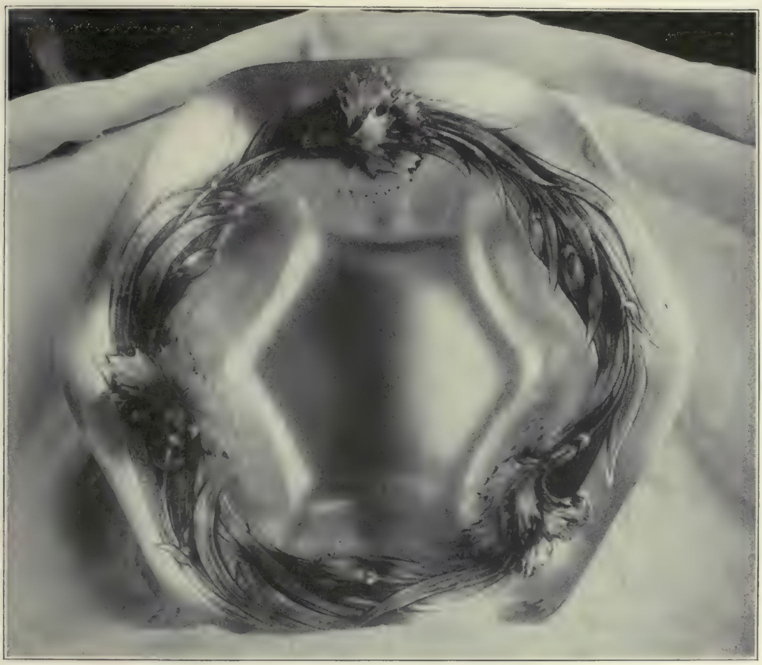


FONT WITH CHASED DECORATION.

earlier steps on the same piece. To raise the design on pieces like this it is necessary to use the "snarling iron," as illustrated and described in the April, 1912, issue.

RECESS CHASING.

The next illustration shows a slightly different type of chasing that is comparatively easy of execution. It is known as "recess" chasing.



SILVER FRUIT DISH, CHASED CARNATIONS.

The rings that run clear around the vase are simply two lines close together made with a "tracing" tool. The outline of the decoration in the middle of the lower band was first outlined with the tracing tool and then parts of it were beaten down with a planisher lower than the level of the surface, making a recess that forms an effective and simple decoration.

The photograph of the holy water font shows an effective application of various kinds of chasing. The front and the small rosettes show a consistent use of the raised relief chasing, sometimes called "repoussé".

The chased line connecting the rivets is made with the straight tracing tool, and the different texture on the background is made with a planishing tool, making a soft contrast that sets off the entire design.

The silver fruit dish with the chased carnations is a fair example of the extent to which this interesting process can be carried. But it should be remembered by the beginner that such results cannot be accomplished by a few hours' practice. Chasing is the highest type of metalworking, and it requires and reveals the spirit of patient skill and intense interest as no other process does. It is (as always) best to start on the simpler forms first, get acquainted with and acquire a mastery of the tools and their capabilities, gradually working up to the more difficult forms, and the result will be sure and satisfying.

(*To be continued.*)

LAMP WITH "CRAMPED" SEAM BASE.

EDITORIAL

WE wish to call special attention to the changes that are taking place in manual training work of the elementary schools as shown by the data presented in the Current Items department of this issue. The data is not as complete as we had hoped that it would be, but it suggests a few tendencies, and invites comment and discussion. The general shaking up of educational ideas that has come with the movement for vocational education seems to have reached a stage where we begin to see some of its effects. The first of these, so far as the manual arts are concerned, is a little better time allowance for the work, and a more general willingness to consider questions of time and educational values on their merits. Prejudice is less active. The greatest drawback to the manual training work of this country is the fact that it does not have enough time in which to accomplish the results expected of it. It has been trying to do the unreasonable—the impossible. On this point the data given is encouraging, tho it shows that we are yet far from the goal of our endeavors. In the second place a noticeable change, partly due to the vocational movement, but more largely due to forces quietly at work before that movement broke upon us, is the revision of the subject-matter of the manual arts in the elementary school. The new movement, in encouraging specialization, is having the effect of bringing within the reach of the elementary school a richer body of subject-matter, and this is quite in harmony with the thought previously developed that the manual arts work of the elementary school should not consist merely of woodworking, or even of the mechanic arts alone, but it should include also the plastic arts, and the book-making arts, the graphic arts and the textile arts. At any rate, a richer manual arts offering seems certain thruout the elementary school. Moreover, the data collected suggests certain places of emphasis for the several arts taught.

Changes and Tendencies It is pefectly clear that for boys the mechanic arts hold the chief place in the grammar grades. Of these arts benchwork in wood is decidedly the most popular subject. But we find two tendencies to modify the offering of these grades,—one by adding metalwork or some other craft to the woodworking, and in the same shop, the other by offering separate and specialized pre-vocational courses, such as plumbing, electrical work, printing, etc. It

is equally clear that in the primary grades the tendency is to keep the work broad, covering simple work in the plastic arts, the textile arts, and the book-making arts. In a few places, not reported in the data, there is an attempt to adapt some of the processes of the mechanic arts —woodworking, for example—to the needs of the primary grades, but the general opinion seems to be that the mechanic arts may better be reserved for later grades. The section of the school where there is the greatest change and uncertainty is the intermediate grades. The data gathered would indicate that the strongest tendency here is toward increasing the work in the mechanic arts, especially benchwork in wood and saw and knife work in thin wood. The book-making arts take second place. The difficulties in these grades are especially complex because of the fact that here are found many over-age boys. In some cases the introduction of benchwork into the sixth grade has come because of the desire to meet the needs of these particular boys. If, as we may hope, there will soon be special schools adapted to their needs, as there are already in a few places, the question of benchwork in any of the intermediate grades ought to be more easily settled. With more time for the shopwork of the grammar grades and the over-age pupils removed, it may be questioned whether in the intermediate grades benchwork in wood cannot well give way to the book-making and the plastic arts. There is certainly developing a rich field in bookbinding, paper box making, and the construction of miniature furniture and toys out of heavy paper, applying the principles of steel construction and teaching the elements of good design, also in clay work, including the elements of modeling and pottery.

We believe that, for the most part, the changes that are taking place in the manual arts work of the elementary school are in the right direction. We are confident that the future will give more time to the work, that it will bring into the work more problems of real social significance and value, and that it will eliminate the trivial things that have characterized some of the work in the past. —C. A. B.

Vocational Guidance in Cleveland

Cleveland is developing what promises to be a very significant contribution to the solution of the problem of vocational guidance.

The movement was inaugurated by a request from the Cleveland Chamber of Commerce, prompted by its educational committee, to the Young Men's Christian Association of the city to establish an experimental vocational bureau under competent direction,

"and to devise a system of collecting and disseminating widely" information concerning the requirements and opportunities of industrial and commercial vocations open to young people, with provision for competent advisors. It was the belief of the committee that the specific plans should have a broad general basis, thoroly organized, and that the large responsibility of the work should become eventually a function of the Board of Education.

The request resulted in the calling and organizing of a general committee of thirty on vocational guidance, composed of representatives of the public schools and other educational institutions, employers, labor organizations and the various social up-lift forces of the city. This committee determined upon the organization of an institute of one hundred members, composed of representatives of the various social interests of the city, which should make a study of the existing conditions in the field of vocational guidance and industrial education as a basis for report. A series of institute meetings was organized for October, November and December. A general plan of work was outlined and the following committees were appointed to investigate and report upon important phases of the work: Study of Vocation Tendencies, Investigation of Occupations, Opportunities for Vocational Training in Cleveland, Auxiliary Aids, and Placement. This and subsequent meetings were addressed by leading exponents of various phases of vocational guidance work, including Dr. Helen Woolley of Cincinnati, Jesse B. Davis of Grand Rapids, Mrs. Lucinda W. Prince of Boston, Miss Edith Abbot of Chicago, Miss Alice Barrows of New York, Dr. Meyer Bloomfield of Boston, Miss Winifred Jevens of London, England, Prof. George H. Mead of Chicago, E. W. Weaver of Brooklyn and Miss Edith Campbell of Cincinnati. The addresses were followed by general query and discussion. The meetings extended from four o'clock in the afternoon until nine in the evening with a recess at which time the members of the institute usually dined together. The expenses of the institute and meetings were defrayed by an assessment of five dollars from each member. The highest commendation of the comprehensive and thoro-going plan of procedure followed by the institute was given by each of the distinguished visiting experts.

The result of the institute's work will be a report, probably issued in the spring, including a comprehensive plan for vocational guidance in Cleveland. In general the plan will contemplate an investigation of social and economic conditions relative to vocational guidance, which will cover some two years and give the basis for specific action. This

report should prove a valuable contribution to the cause of vocational and industrial education.

In the meantime a special committee of the School Masters' Club of Cleveland and Vicinity is charged with the responsibility of reporting to the club in March a plan and recommendations for vocational guidance. This committee has decided that its activities shall be independent of other organizations, limited to work by and thru the public schools, but it has already developed in committee meetings that the scope of its report must be much broader than at first supposed. It will be interesting to compare the findings of this committee of school men with the results of the larger movement.

—W. E. Roberts.

Another Step Forward For several years we have been hoping for the time to come when it would be possible to establish in this magazine a department that would bring together items of current interest from other countries, especially from England where manual training traditions and many of the present manual training problems are fundamentally just like those in America. We have believed that carefully selected facts stated from the English point of view would be interesting, broadening, and often definitely suggestive to our readers. From the first we have realized that the value of such a department would depend almost wholly upon the wisdom and literary power of the man secured to do the writing, and because of this fact we are especially glad to be able to announce that, beginning with the present issue, we shall publish foreign notes prepared by H. Williams Smith of London, formerly editor of *Manual Training*. When the way was open to establish such a department we turned without hesitation to Mr. Smith, and with characteristic cordiality he responded favorably.

We did not select Mr. Smith because he has a long string of degrees attached to his name; we have never seen any there, tho one meeting him would need documentary proof to be convinced that he is not a university graduate. Neither did we select him because he expects to say the "last word" on manual training. On the contrary he is quite modest in his claims; he is merely a learner with the rest of us. However, his background of practical experience, his teaching, his reading, and his contact with men who bring things to pass, have given him a point of view that is of value. It is not the official point of view but that of the progressive teacher and student of education who in England

is helping to re-shape education from the inside. Men of this type build from the ground up instead of tying to a hovering biplane that is sure to come down sooner or later. In a very real sense Mr. Smith is a typical English teacher of the manual arts besides being a happy turner of phrases. He is already known to our readers, but to make them better acquainted with him we present his portrait as a frontispiece and give the following details of his career:

H. Williams Smith

Harry Williams Smith was born in 1868, "a man of Kent", in which county he spent all his early years. After an elementary education he left school at fourteen and served an old-time apprenticeship of five years in the shop of a carpenter and joiner. When "out of his time" he went to London and spent two years in a shop as "improver". In 1889 he left London for Canada, and lived five years in Toronto, three of which were spent as employer in a steam laundry business where he made himself practically familiar with every detail from washing a shirt to running the engine. He considers these years very profitably spent. In 1894 he returned to England and took up joinery again, working in several shops in the city of London. He became the "setter out", in a large shop, but not being fully satisfied with this as his ultimate goal, he spent his evenings in studies to qualify as a manual training teacher.

In October, 1900, he was appointed an assistant instructor under the London School Board. Two years later he was promoted to instructor. He is still actively engaged in teaching under the London County Council; he also holds an evening appointment at the Commercial Travellers' Schools at Pinner. For two years beginning in 1909, Mr. Smith was a lecturer to the teachers' classes under the London County Council, but gave up this work to accept the appointment as Examiner in Theory of Manual Training for the City and Guilds of London Institute. For seven years, from 1905 to 1912, he was editor of *Manual Training,* the official organ of the National Association of Manual Training Teachers, at first dividing the responsibility with J. Scott Knight, but later taking the full editorial management. He still remains on the staff as an associate editor, tho the responsibility for the editorial work has been taken by John Arrowsmith of Halifax. For four years Mr. Smith has been a regular contributor to *The Schoolmaster,* in which he has a column devoted to manual training notes. From time to time he contributes also to *Educational Handwork.* This would seem to be enough to keep one pen busy, but when Dr. Hayward,

a London inspector, collected his material for the book "The Primary Curriculum" H. Williams Smith wrote the chapter on manual training.

We are aware of the fact that the above statements are not self-explanatory; another view of Mr. Smith's life is necessary to reveal how such training would produce such results: At school each day he is a teacher, but at home he is still a student. He is an enthusiastic reader of poetry, philosophy and biography—preferably books *not* on education; his library tells the story. He knows Emerson and Lowell, as well as his Ruskin, far better than most American teachers. He is a lover of music, pictures, and the historic, romantic London in which he lives. At his home in Hampstead is a wife that helps along his good work and three children each of whom has already won a scholarship for higher education in London. —C. A. B.

The object of manual training is to lead the thinker to create more and the worker to think more. In doing so it will cause the thinker to think more sanely and the worker to work more truly. Doing is essential to the highest knowledge, and thinking is essential to the most effective doing. You never really know anything until you have done it, and you cannot do anything effectively until you know it; and, a wisely planned scheme of education will not separate the two.—Milton Clauser.

ASSOCIATIONS

NATIONAL SOCIETY FOR THE PROMOTION OF INDUSTRIAL EDUCATION

The sixth annual convention of the National Society for the Promotion of Industrial Education was held at the Hotel Walton, Philadelphia, on Thursday, Friday, and Saturday, December 5 to 7, 1912. A strong program was presented and much significant work was accomplished.

To teachers in the field of the manual arts perhaps the most interesting discussions were those of Thursday afternoon on "The Training of Teachers," and an informal discussion on Saturday afternoon on "What Principles and Policies Should Underlie State Legislation for Vocational Education?"

Training teachers for girls' work

In opening the discussion of the problem of training teachers for girls' work, Mrs. M. S. Woolman, president of the Women's Educational and Industrial Union, Boston, and Miss Florence M. Marshall, principal of the Manhattan Trade School for Girls, New York, submitted the following list of theses:

1. Vocational and trade schools for girls have problems peculiar to themselves, and require especially trained teachers.

2. The method of conducting vocational education should, of necessity, differ greatly between such extremes as the school in the small community with no special industries and the great industrial city. One solution of the problem will not fit all needs.

3. The training of young women for industry in the large industrial cities presents two especially serious phases: (1) giving them adequate and industrial efficiency with ideals of labor, and (2) making them healthful, effective women fitted for the duties of the home.

4. To train girls to satisfactorily meet both problems takes time, and the pressure of early wage-earning makes short-time courses necessary because the prevocational preparation is not yet a good foundation on which to build; hence time muse be taken for preparatory work.

5. We are not likely to secure the best teachers for teaching of the trades themselves by drawing them from the regular public school and giving them a short additional training in industrial processes.

6. It is not possible to satisfactorily train industrial teachers in the ordinary normal school.

7. Successful industrial teaching must be based upon real experience in the trade taught.

8. Trade experience does not of itself make a good trade teacher, the difficulty being (1) a narrow point of view of the purpose of the training and (2) an over-emphasis on the product rather than on the pupil.

9. The very best teachers and the most skilled trade workers are needed, but the combination is difficult to find at present.

10. In training capable trade teachers, we must expect a greater per capita cost than we are in the habit of giving to the ordinary school teachers.

11. There are many kinds of teachers needed for industrial education—prevocational, secondary-vocational, and trades schools—requiring, in varying degrees, household arts training; efficiency training in trade shops; trade academic training to further industrial intelligence; trade-art training for industrial purposes; training in hygiene in order to better conditions at present interfering with the success of wage-earners, either at trade or at home; practical social and economic information, and much investigation of industry to gain a knowledge of the needs of different localities.

12. Poor health in women who work is a menace to the future of the country. Special knowledge of hygienic living should be given all teachers who will work in industrial schools. A physician should be in constant attendance in such schools, to cooperate with the teaching force and better prepare each wage-earner for the physical strain of the market.

13. The idea of woman as a home-maker should be ever present when training teachers, but it cannot be emphasized in the short-time trade school of industrial cities as it can in vocational schools in other localities.

14. A new form of normal industrial education is needed, which will have connected with it a business institution where the teachers can have practical experience. Trade workrooms cannot be expected to interfere with their regulations to attend to teachers who need to have practice; such normal school shops must be organized in a way satisfactory to business men and to labor.

15. As skilled trades require for teachers those who have had real and adequate trade experience, the normal school should organize practical method and attendant courses for trade workers. Effective teachers can be obtained from industry, if women are selected for broad-mindedness, as well as skill, and then are trained for teachers. Evening courses might help such intending teachers, but it would be only a partial solution of the problem unless opportunity for observation and practice in teaching can be given. *Trade workers* with executive ability are needed in trade school shops.

16. The problem of giving experience on correct materials must be met. Neither the institution nor the teachers can solve it. Some connection with trade is necessary.

17. Teachers trained in good domestic art courses, and who have taken trade experience, have been found to make good teachers for vocational schools or for the elementary and intermediate grades of dressmaking in a trade school.

18. The trade school and the high schools of a technical or vocational nature should be foundations for future teachers in industrial schools. These schools should also be utilized for practice and assistant teaching. Germany and Belgium have tried this plan. Real trade experience, following such a foundation, would prepare the way for normal training, investigations of industry, practice teaching, and, finally, assistant teaching. Such preparation might prove effective for work below the trade school shops.

19. Supervisors and directors of industrial schools should combine broad-minded culture, knowledge of working conditions, interest in working people and their lives, modern, social and economic intelligence, the relation of domestic science to health and household arts to life, with a knowledge of trades fitting the supervisor to organize them and judge the value of the course conducted in them.

Training teachers for boys' work

The following propositions were advanced in the discussions of teachers for boys' work, by Dr. David Snedden, commissioner of education for Massachusetts, and Charles R. Allen, agent of the Massachusetts state board of education:

1. One of the most serious problems of the industrial school of the future is to deal with adolescents, taking them as they come and fitting them for practical tests of social and industrial efficiency.

2. The ordinary type of pedagogical training given to prospective teachers will not serve to adequately prepare them for successful service in such industrial schools.

3. Successful teaching must be based upon real experience in the line taught.

4. Trade training alone will not make good teachers.

5. The industrial school has problems peculiar to itself, which call for special training for teachers in such schools.

6. We are not likely to secure good teachers for industrial schools by drawing teachers from regular public schools and giving them additional training.

7. Pseudo-experience, such as is gained by ordinary students in school and college shops, will not replace actual practical experience.

8. "Student" experience under real conditions, such as is gained by a short period of contact with industrial environment, will not replace real experience.

9. A person who has passed thru college, whether general or technical, by a continuous school process, is not likely to make a successful industrial school teacher, nor to afford good material for a special training course for such teachers.

10. We cannot secure, as teachers in industrial schools, those competent to hold desirable and profitable positions in industry as long as we pay them on the same basis as regular public school teachers.

11. In training competent industrial school teachers, we must expect a greater per capita cost than we are in the habit of expecting in the training of ordinary school teachers.

12. A scheme for training industrial school teachers, starting with adults who have already had successful experience as teachers in regular schools, is not likely to succeed.

13. A scheme of training will not be efficient which proposes to deal with those who bring to it only a general secondary school preparation, and which proposes to give them during the college phase of their education all necessary training to fit them for successful teaching in industrial schools.

14. The evening course, which proposes to train persons with experience employed during the day, is only a partial solution of the problem, owing to its inability to afford an opportunity for observation and practice in teaching during the course.

15. The German experience shows that the most effective teachers must be drawn from the industries.

16. The most effective scheme known thus far is the German scheme, involving the following steps: (a) A technical training in the middle technical school, followed by (b) a prolonged experience as an actual worker in the industry which is to be taught; (c) a return to a training course giving special training for teaching in an industrial school, accompanied by an experience as an assistant teacher in an actual school.

17. In view of the fact that (a) we must get our efficient teachers from the industries, and (b) that these people cannot afford to take full-time day courses, the most promising plan would seem to be a course which provides for a series of evening unit courses, each unit dealing with some specific phase of the special instruction required for an efficient teacher; following this by employment in industrial schools as an assistant teacher, with an obligation on the part of the industrial school to conduct a certain amount of further normal training work with these assistant teachers.

18. The most promising plan for training teachers for industrial schools would involve the following steps: (a) The gathering of the pupils with successful experience in the industries; (b) evening unit courses for the student while he continues to work at his calling; (c) each unit dealing with some phase or factor of the preparation required for an efficient teacher; (d) followed by employment as an assistant teacher in an industrial school; (e) with obligation on the part of the school to give a certain amount of additional normal training to him after he enters the service.

The general discussion which followed the presentation of these leaders was the most animated and profitable of the entire convention.

At the Friday morning session, Secretary Charles A. Prosser of the National Society, and Dr. E. G. Cooley, special investigator of the Chicago Commercial Club, discussed the "Principles and Policies which Should Underlie State Legislation for Practical Education." This discussion was followed by careful study on the part of a committee at several sessions, and its report was presented on Saturday afternoon. As the result of the deliberation at that time, a statement of principles and policies was formulated, for publication and distribution by the Society. This is perhaps the most important piece of constructive work that has been accomplished thus far in the movement for industrial education.

At the business session on Saturday, the present officers were reelected as follows: president, Hon. William C. Redfield, vice-president American Blower Co., New York; vice-president, Howell Cheney, South Manchester, Conn.; treasurer, Frederick B. Pratt, Pratt Institute, Brooklyn. It is understood that Mr. Prosser continues as secretary. The filling of this position by appointment is committed by the Constitution to the Board of Managers; the same is true of the selection of the time and place of the annual meeting. —W. T. Bawden.

SCHOOL CRAFTS CLUB.

The School Crafts Club of New York City has held two meetings. The first, on Friday, November 15th, was taken up chiefly with the report of a committee on interrelation of clubs, which was presented by the chairman, A. W. Richards of the Ethical Culture School.

At the May meeting of the Club, it was voted that a committee be appointed to take steps toward realizing a scheme of cooperation between the various clubs and associations engaged in similar lines of work. The committee recommended: (1) That other clubs be invited to send periodical reports of their proceedings to our secretary; and (2) That the School Crafts Club present specific questions to other clubs for consideration and action.

The second meeting occurred on Friday evening, December 13th. The program consisted of four round table discussions, with the following leaders and topics: (1) Elementary school subjects, textbooks and shop notes, blackboard illustrations and charts, by Frank I. Frishberg and Ezra Putnoi; (2) The most direct and efficient manner of teaching color and color harmony in the first year of the high school, illustrated with drawings and charts, by P. A. Schwarzenbach; (3) Subject-matter related to industrial and fine arts, and plans for presenting this material, by R. J. Leonard; (4) Supervision and gradation of work in the primary and elementary grades, by Charles R. Bostwick.

ILLINOIS HIGH SCHOOL CONFERENCE.

The manual arts section of the High School Conference was held at the University of Illinois on Friday, November 22. A goodly number of teachers were in attendance.

The morning session was devoted to a discussion of design in the manual arts. Charles F. Kelly, instructor of design in the art department of the University of Illinois, presented a paper on "Design in Education," in which he emphasized the need of thoughtful preliminary study of projects in manual arts before execution. The second address was made by Samuel J. Vaughn, State Normal School, DeKalb, who made a plea for more design in the teaching of manual training thru the logical development of the object to be constructed for a specified use and under definite conditions. He asserted that the term "applied design" is meaningless. "A good design is one that with good construction will serve the ends of utility, take its place in harmony with its surroundings, and satisfy the sense of good taste in the home or in the community."

Miss Clara E. Ela, State Normal University, Normal, gave some definite suggestions of methods by which the manual training and art teachers of the same school can cooperate in their criticisms of design by their pupils. The morning session closed with a general discussion of design and the best methods of cultivating taste among school pupils.

Professor Frank M. Leavitt, University of Chicago, opened the afternoon program with an address on "Vocational Training in Illinois." Professor Leavitt emphasized the need of vocational teaching and asserted that it is desirable to have the schools in which the work is done under the common school organization rather than under the control of a separate board.

The remaining time of the meeting was given to a discussion of the outline of a course of study for the second unit of entrance credit in mechanical drawing. The tentative course presented two years ago by Professor Crawshaw was considered in the light of experience with mechanical drawing classes in some of the larger high schools. Frank S. Needham, of the Oak Park and River Forest Township High school, opened the discussion with a carefully prepared paper in which each division of the work was considered and suggestions made, based upon his long and successful experience.

Assistant Dean H. W. Miller, College of Engineering, University of Illinois, presented an outline of work and explained its operation in detail. The concensus of opinion seemed to be in favor of attempting less work than the tenta-

tive outline presented, and eliminating some advanced divisions of the proposed work. The whole question was referred to a committee for report at the next annual meeting.

It is expected that a detailed report of the proceedings of the High School Conference will be published by the General Conference Committee, which may be secured by application to the chairman, Professor H. A. Hollister.

E. J. Lake,
University of Ill.

MINNEAPOLIS MANUAL ARTS CLUB.

The work of the Minneapolis Manual Arts Club is organized on a plan full of interest and suggestions to other groups of teachers and supervisors. The Club is first divided into six groups, or round tables, with chairmen, as follows: Grade Shops, Mr. Harrigan; Constructive Drawing, Miss Stevens; Mechanical Drawing, Mr. Southworth; Cabinet-Making, Mr. Moore; Pattern-Making, Mr. Libby; Machinework, Mr. Barlow.

Each of these round table groups is responsible for two programs during the school year. In addition there are five general meetings of the Club, in September, November, January, March, and May. At each of these general meeting each round table group is responsible for the presentation of its particular aspect of the subject or question under discussion.

The topic announced for the September general meeting was as follows: "Give a lecture in outline that you gave your class on some topic or division of the subject you teach. Give also the test that you gave the pupils on the lecture." This topic was duscussed by a representative from each of the six groups. Ten minutes is allowed for presentation by each leading speaker, with general discussion following.

A similar plan was followed in the November meeting with the following topics: "Discussion of the textbooks and books of reference pertaining to your subject. Tell how you make use of them in your classes and what reading you demand of your pupils."

For the January meeting the subject of discussion was: "Shop organization as to handling of supplies, tools, finished models, time on models, working on class projects, etc." The question proposed for the March meeting is: "What should be the next high school in Minneapolis? Discuss the effect of such a high school in your work."

SOUTHWESTERN OHIO MANUAL TRAINING ROUND TABLE.

The 8th semi-annual meeting of the Southwestern Ohio Manual Training Round Table was held at Hamilton on Saturday, December 7, 1912. The following questions were proposed in the printed program for discussion:

1. How much forestry should be included in a high school manual training course?

2 Are we doing too much woodwork in our manual training courses and omiting other subjects just as necessary?

3. Are the educational inducements offered young men to follow the trades what they should be?

4. What course of reading should shop teachers pursue?

5. Lesson plans for shop instruction.

6. Equipment. How much? By whom?

7. Standardization of manual training courses.

8. Unity without uniformity in manual training courses.

9. To what extent should the teacher care for the boys' tools, and to what extent should they be sent out?

10. What, if any, new texts are being prepared to meet the requirements of manual training teachers?

11. Can the average manual training teacher design his problems and teach his pupils the principles of design?

12. Ornament and decorative design in connection with 7th and 8th grade projects.

13. A State Association. Kind of program.

14. Title space for 8th grade and high school drawing.

PITTSBURGH.

The November meeting of the Manual Arts Association of Allegheny County, Pa., at the Fifth Avenue High School, Pittsburgh, considered and discussed a report of the Manual Arts Department at the Chicago convention of the National Education Association, which was presented by Dean C. B. Connelly of the Carnegie Technical Schools.

At the December meeting the subject was: "Stupidity versus Supernormality," which was presented by Dr. E. E. Mayer, professor of clinical neurology in the University of Pittsburgh.

A report on the Dresden Convention of Art Teachers was presented at the January meeting by C. Valentine Kirby, director of art, Pittsburgh. The subject proposed for the February meeting is "Household Arts in the High School," by Miss Irene E. McDermott, director of household economy, Pittsburgh; and for the March meeting. "The Advisability of Introducing Technical Subjects in the 8th Grade", by Frank H. Ball, director of industrial training.

The Association publishes an attractive booklet containing the program for the year, the constitution and by-laws, and a list of names and addresses of teachers and directors of manual arts of Allegheny County, Pa.

NEW YORK.

The New York State Teachers' Association held its annual convention the last week of November. The Tuesday afternoon session of the elementary school section included the following program: "The Extent to which the Elementary School can Assist in Vocational Guidance," by Meyer Bloomfield, director of the Vocational Bureau, Boston; "Vocation Training in the 7th, 8th, and 9th grades, a Buffalo Plan of Organization;" by Charles P. Alvord, supervisor of grammar grades, Buffalo.

The Art and Manual Training Section held two sessions. On Tuesday morning the following papers were presented: "The Product of Vocational

Schools," by L. A. Wilson, State Department of Education, Albany; "Educational versus Vocational Manual Training," by F. G. Sanford, State Normal School, Oneonta. On Tuesday afternoon the following program was presented: "Drawing from the Grade Teacher's Viewpoint," Elizabeth B. Small, State Normal School, Buffalo; "A Report from the Dresden Congress," Ruth R. Shutts, State Normal School, Potsdam; "Our Exhibit," Amelia B. Sprague, State Normal School, Buffalo.

At this convention it was agreed that next year all the forces interested in art, vocational training, manual training, and home economics, shall be united in one general session in the morning, with a speaker of general interest, and that in the afternoon there shall be division into smaller sessions with more specialized and technical discussions. The entire group is to be known hereafter as the "Industrial and Home Education Section."

For the January meeting of the Buffalo, New York, Manual Arts Association arrangements were made for H. B. Jergeson of the Rogers-Brown Co. of Buffalo, to speak on "The Steel Industry," the address being supplemented with moving pictures showing the operations of this industry from the mining of the raw material to the finished product.

DEPARTMENT OF SUPERINTENDENCE.

The Department of Superintendence of the National Education Association, together with numerous other societies, will meet at Philadelphia, February 25-28. The chairman of the local committee on arrangements and accommodations is Louis Nusbaum, 17th and Pine Streets, Philadelphia. The headquarters will be at the Bellevue-Stratford Hotel, European, rates from $2.50 up. Copies of the program may be obtained from Secretary D. W. Springer, Ann Arbor, Mich.

A strong program is being prepared for the next meeting of the Ohio Manual Training Teachers' Association which is to meet in Columbus, February 15th. All manual training teachers of the state are considered as members of this organization and are requested to send their names and addresses to the secretary, in order that they may be reached with announcements.

The Kansas Manual Arts Association at its annual meeting, held at Topeka, November 7th, appointed two committees to consider and report on the subject of uniformity of the course of study in shopwork and in mechanical drawing. The committee on shopwork, of which the chairman is Professor A. M. Burmann, State Manual Training Normal School, Pittsburg, made a partial report at this meeting for grades 7 and 8 and the high school. The committee was continued for another year with the expectation of bringing in a complete report at the next meeting. Professor C. J. Smith, State Normal School, Hays, is the chairman of the committee which is to prepare a course of study for mechanical drawing. It is the purpose of the Association to standardize the work in the manual arts in the elementary and secondary schools.

An excellent program is being prepared for the manual arts and industrial education section of the Alabama Educational Association, which holds its annual meeting at Montgomery, March 20 to 22.

It is proposed to unite the Iowa Manual Arts Association and the Iowa Home Economics Association, and to hold a joint meeting on some Friday evening in February or March, followed by separate programs and sessions on Saturday morning.

GREAT BRITAIN.

The National Association of Manual Training Teachers of England will hold its annual conference and exhibit at the London Bay Training College on March 25 and 26th. Addresses will be delivered by the president of the association, Sir John A. Cockburn, K. C. M. G., M. D., and by other eminent advocates of educational handwork.

The Manual and Art Branch of the Victoria, Australia, State School Teachers' Union was formed in March, 1912, with the object of advancing manual training, more particularly as a primary school subject and as a basis for future technical instruction. The association is particularly concerned with the establishment of a preliminary course of training broad enough to give an impetus to the art or trade side of the technical work, while still being strictly educational. The Manual and Art Branch meets monthly at 227 Little Collins St., Melbourne. At each meeting a paper is read on some subject of interest, which is followed by general discussion.

Manual work was introduced into Victoria about twelve years ago by an organizer procured from England. He introduced the sloyd system. Since then this system of work has been carried on in the primary schools, tho a course more allied to carpentry has been carried on in technical and preliminary trade schools. Very little departure from the Nääs course of work has been allowed in the primary schools until recently. Now the authorities are beginning to recognize that the boys should be allowed scope for originality, and this has been accomplished by introducing a scheme of exercises in which the boys are invited to construct models for themselves.

H. M. Crimp,
Hawthorn, Victoria.

The Illinois Manual Arts Association will hold its annual meeting February 14th and 15th, at the State Normal School, De Kalb, Illinois. The program is as follows: Friday afternoon, at two-thirty, (1) Manual Training in the Elementary Schools. (2) The Use of Books in the Manual Training Class-Room.

(a) Text-books and How to Use Them.

(b) Reference Books and How to Use Them.

Appointment and Election of Committees.

Friday evening a banquet will be given at 6:15 followed by an address of welcome and inspiration by Dr. Cook, the president's address by Professor Frank M. Leavitt, and an address on "The Measurement of the School Product by Business Standards" by George B. Miller, head of the employment bureau of Sears, Roebuck and Company of Chicago.

Saturday morning there will be given brief descriptions of experiments in vocational education recently inaugurated in Illinois. Ira S. Griffith, of Bradley

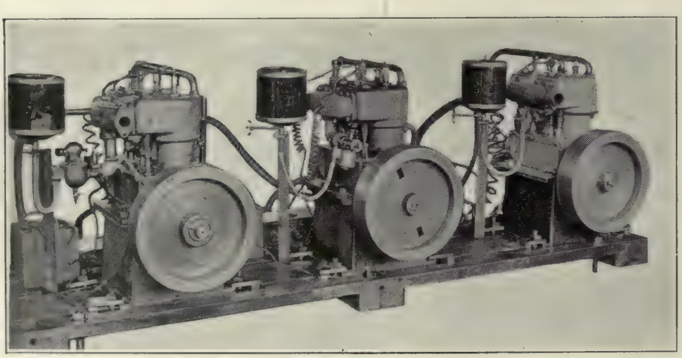
Institute, Peoria, Emery T. Filby, of the School of Education, University of Chicago, and S. J. Vaughn, of De Kalb, will be the speakers. Members who have "started anything" are requested to send in names and topics to the secretary, and a place will be made for them on the program.

Reports from committees and the election of officers will conclude the meeting. The present officers are, Professor Frank M. Leavitt, president; A. P. Laughlin, Peoria, vice-president; A. C. Newell, Illinois State Normal University, secretary-treasurer.

The Michigan Industrial Science and Arts Association holds its next meeting at Muskegon, February 7th. The papers to be presented are: "The Need of Design in Industrial Arts," by Harry M. Kurtzworth, instructor in art, Hackley Manual Training School, Muskegon; and "Efficiency in Printing," by Henry Danna, instructòr in printing, Hackley Manual Training School.

The last meeting of the school year will be held at Kalamazoo, May 2d, at which time the subject for discussion will be "Continuation Schools."

The Connecticut Manual Arts Teachers' Association has had a committee at work this year preparing a traveling exhibit of art and manual training work, for circulation among members in the state. The exhibit is classified by subjects, and work is contributed from various cities whose supervisors are members of the Association. Transportation charges are paid by the school receiving the exhibit. It is hoped to make this exhibit a permanent feature of the work of the Association, and to add to and improve it from year to year.



THREE OF TEN 8 H. P. 2 CYLINDER, VERTICAL HIGH SPEED GAS ENGINES MADE IN SHOPS, 1912, IN COLLEGE OF ENGINEERING, UNIVERSITY OF ILLINOIS. URBANA.

SHOP PROBLEMS

GEO. A. SEATON, Editor.

CAMP STOOL.

The camp stool shown by the photograph and drawing has been used by W. H. Henderson while at Springfield, Illinois, as a first problem in planing. One piece of stock for a top cross-piece is given to each boy, who planes it to dimensions, proceeding as each process is explained by the instructor. When this has been finished, the second cross-piece is given out and is planed to dimensions without instructions. The stock for the legs is given out in one piece which is planed ¾″ x 5¾″ x 23″. From the joint edge lines 1¼″, 1½″, 2¾″, 3″, 4¼″, 4½″ are made with the marking-gage. Each boy saws between these lines and then planes the edges to the marks. The legs are made 1″ longer than required so that if the tenon is not correctly made at first, it may be sawed off and cut again. The circle for the end of the tenon is made with a ¾″ bit, boring until the spur of the bit cuts a circle.

CAMP STOOL.

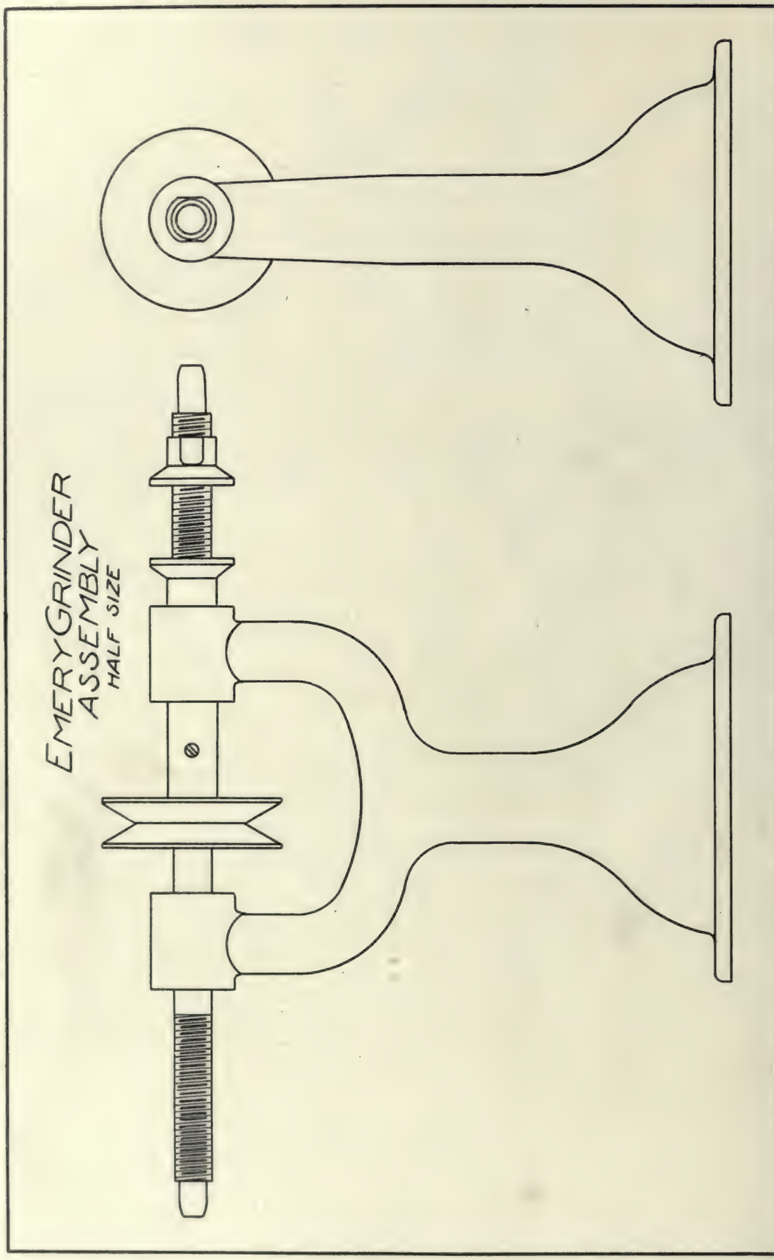
This problem gives excellent training in planing, sawing, gaging, chamfering, chiseling, and boring, and if the work is not absolutely accurate, the usefulness of the finished article is not impaired.

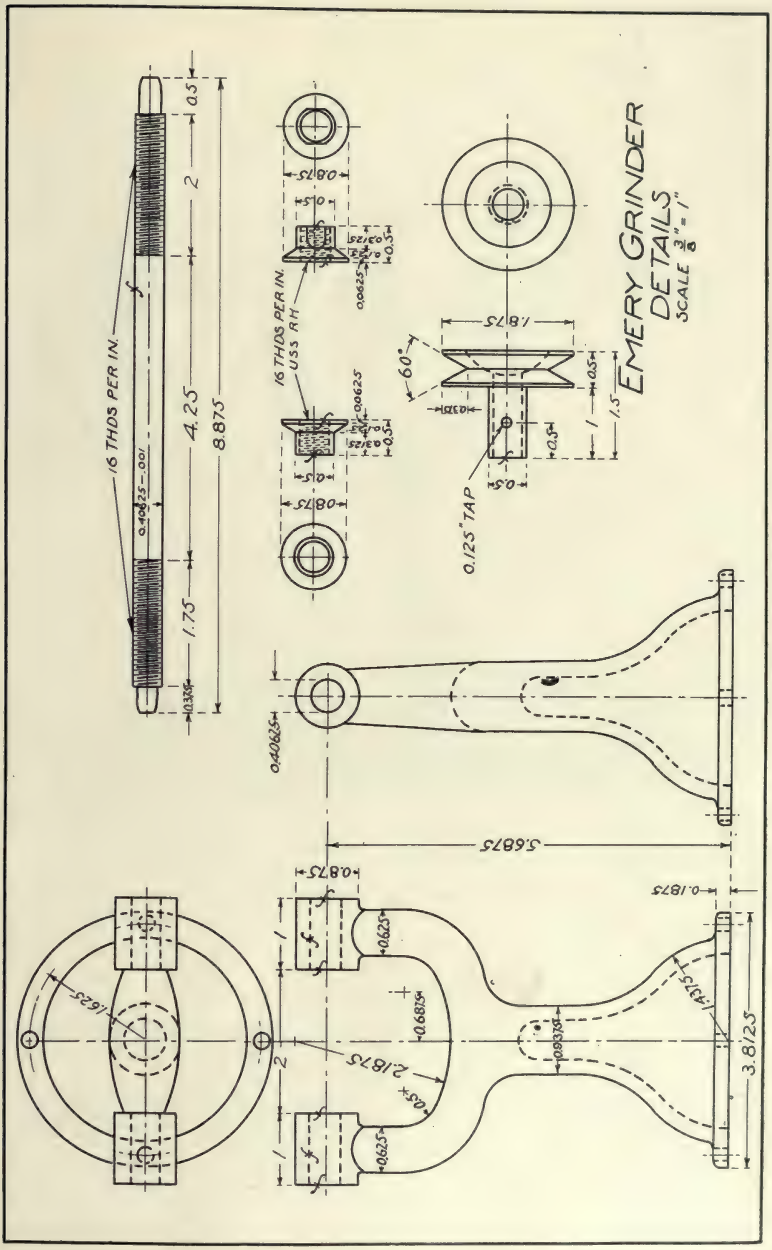
UMBRELLA RACK.

W. E. Hackett of the Boys' High School, Reading, Pennsylvania, contributes the design shown for the umbrella rack. While its lines are severely plain, this is relieved by the engirdling metal bands which also serve to hold the sides firmly together.

EMERY GRINDER.

This problem of the machine-shop shown in the photograph was designed by Henry S. Fichthorn, teacher of machine-shopwork in the Boys' High School of Reading, Pennsylvania. It is an interesting project, that should be suggestive


EMERY GRINDER
ASSEMBLY
HALF SIZE

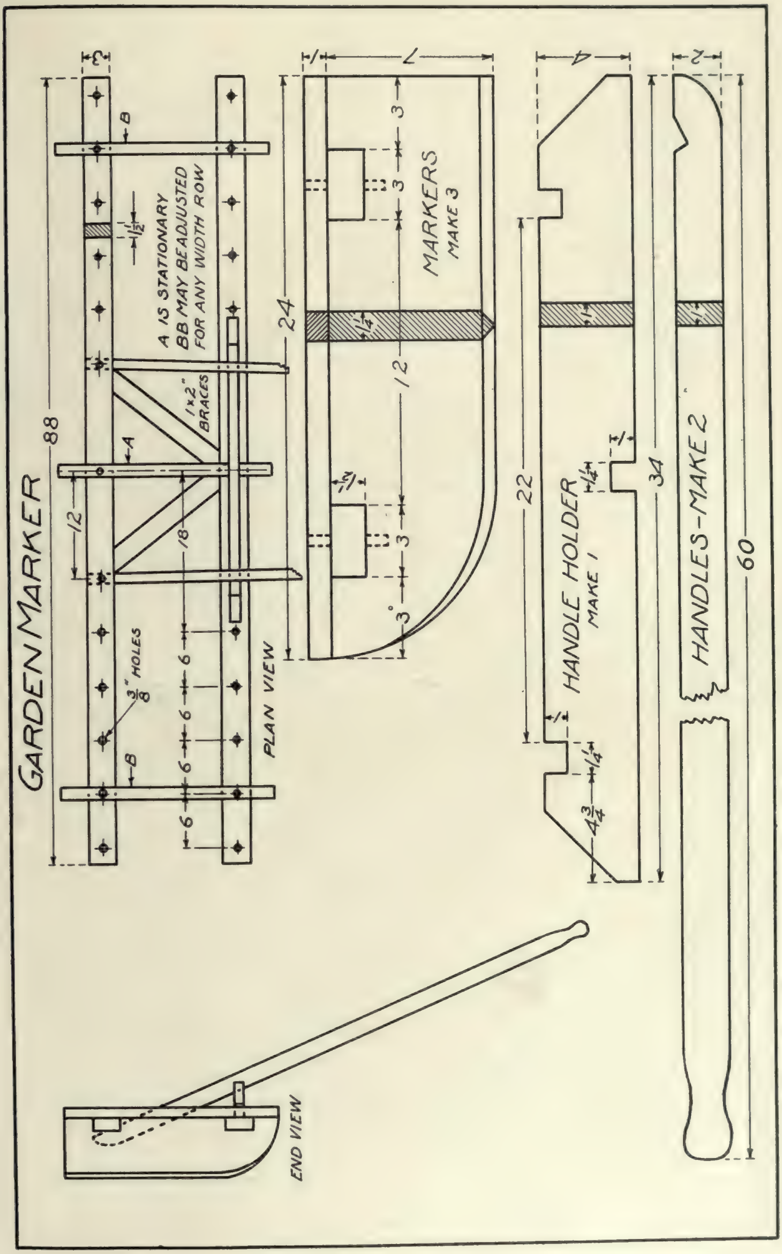

EMERY GRINDER
DETAILS
SCALE 3/8" = 1"
16 THDS PER IN.
16 THDS PER IN.
USS RH
0.125" TAP
8.875
4.25
1.75
5.6875
3.8125
2.1875

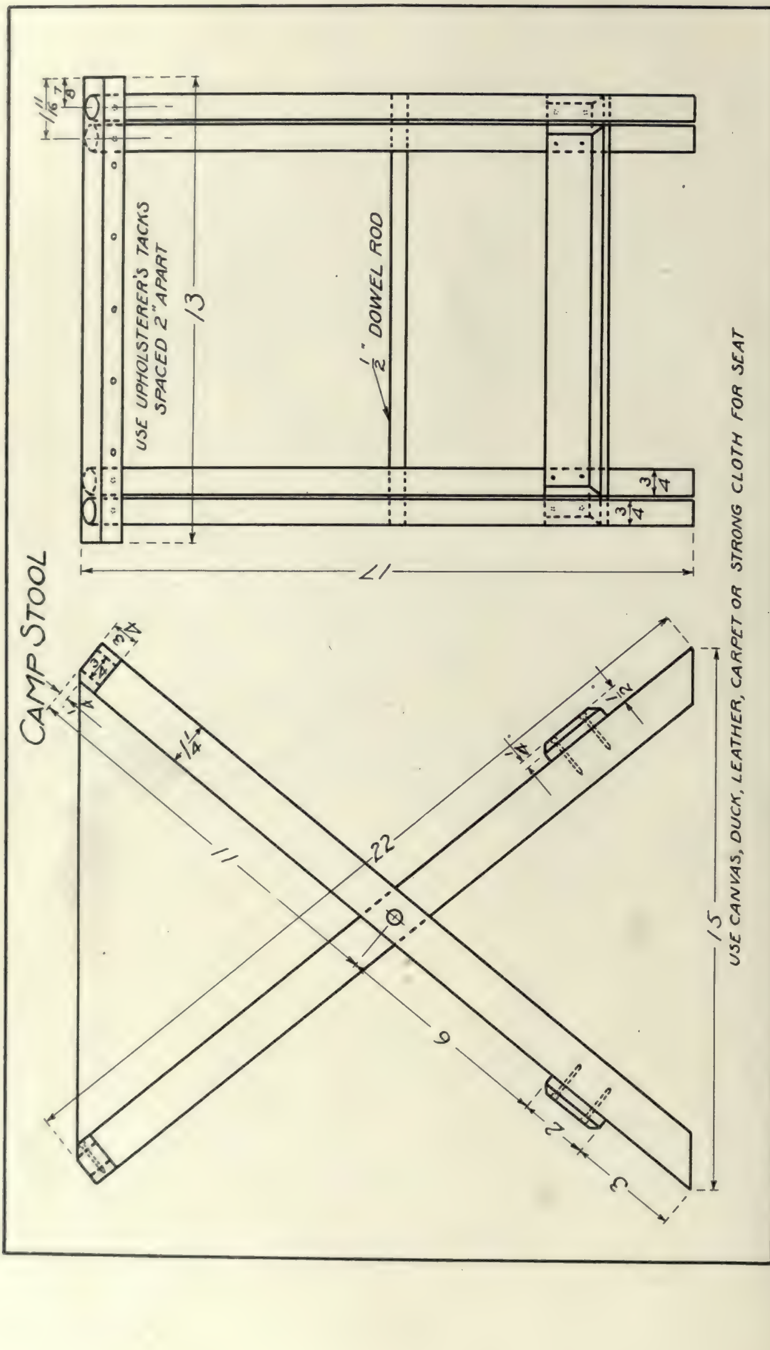
to others in this line of work. In the drawing, the shaft is shown the same size thruout, while the grinder photographed has one end of the shaft tapered from $\frac{7}{32}''$ to $\frac{3}{8}''$.

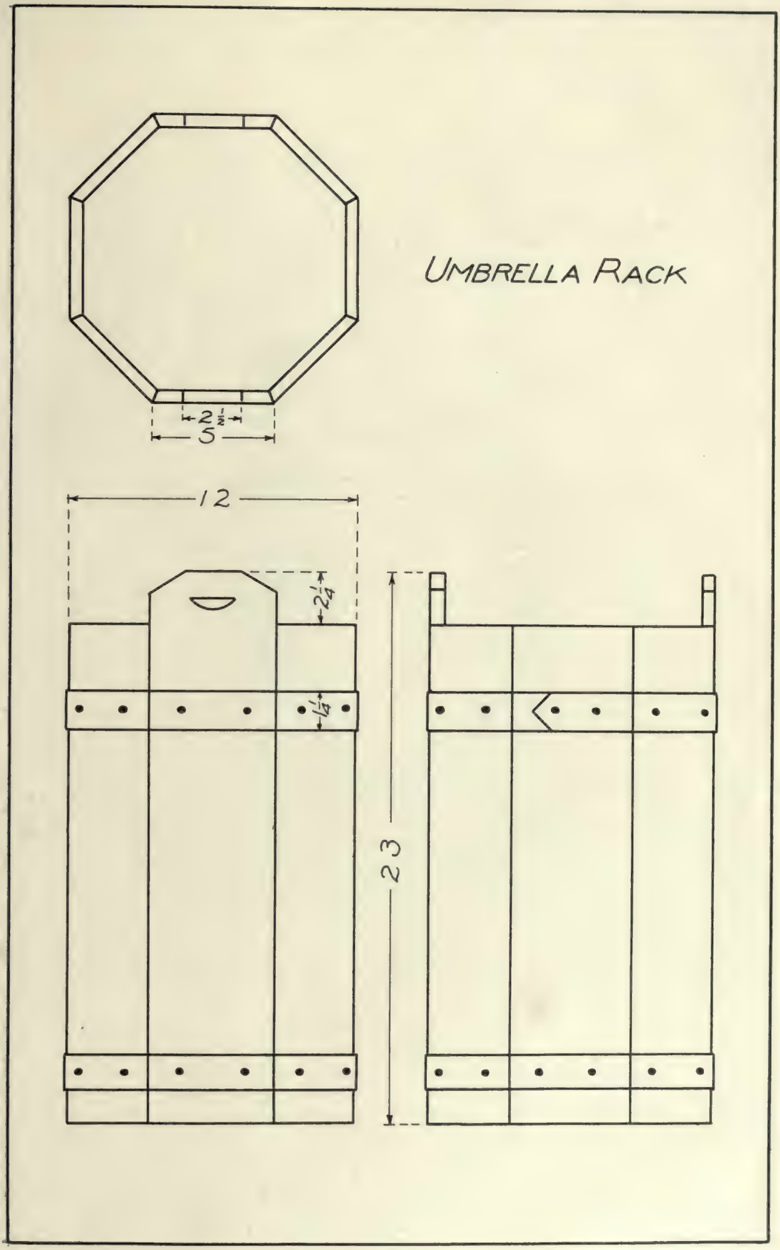
EMERY GRINDER.

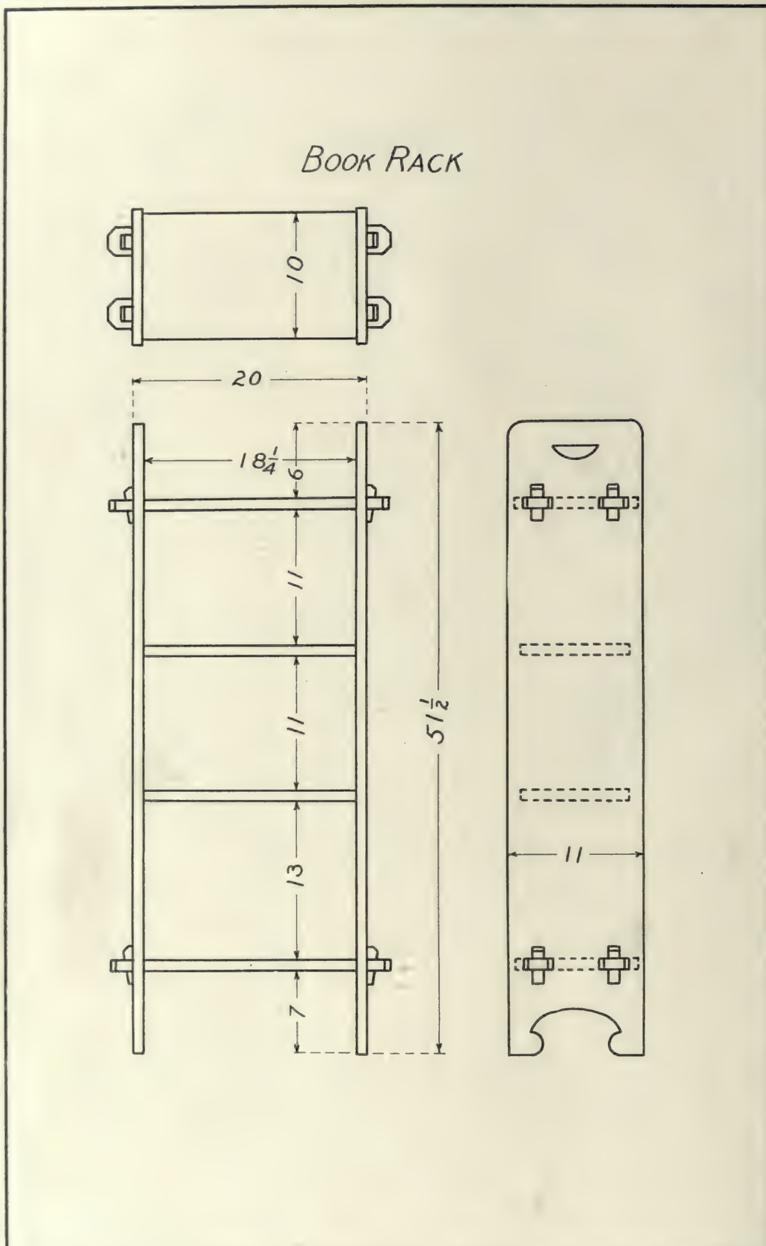
GARDEN MARKER.

The garden marker can well be undertaken at this time of the year so that it will be ready for use by the coming of spring. It will have especial value in such schools as are undertaking school gardening. As shown in the drawing, it is intended to be pulled by hand to mark out the rows for planting. The distance between the rows can be altered by changing the position of the outside markers. If all the parts are made heavier, the marker can be drawn by horse instead of hand. It was designed by A. D. Bailey for use on the school farm at Bemidji, Minnesota.


GARDEN MARKER
A IS STATIONARY
BB MAY BE ADJUSTED
FOR ANY WIDTH ROW
1×2" BRACES
3/8" HOLES
PLAN VIEW
MARKERS
MAKE 3
HANDLE HOLDER
MAKE 1
HANDLES-MAKE 2
END VIEW

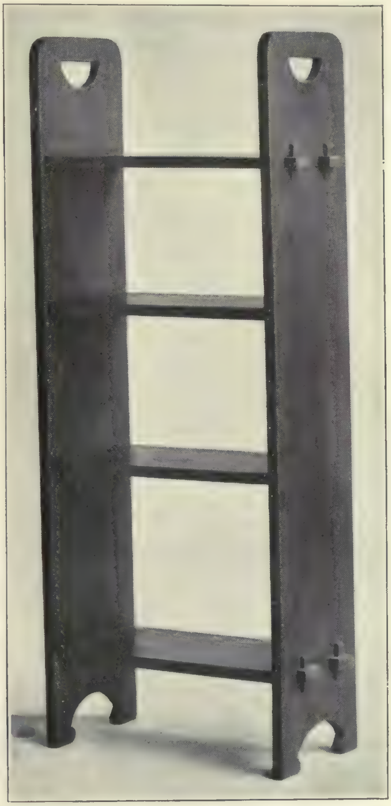

CAMP STOOL
USE UPHOLSTERER'S TACKS SPACED 2" APART
1/2" DOWEL ROD
USE CANVAS, DUCK, LEATHER, CARPET OR STRONG CLOTH FOR SEAT


UMBRELLA RACK
2 1/2
5
12
2 1/4
1 1/4
23


BOOK RACK
10
20
18 1/4
6
11
11
13
7
51 1/2
11

BOOK RACK.

The photograph of the book shelves show a set made in the Reading, Pennsylvania, high school under the direction of W. E. Hackett.



BOOK RACK.

CURRENT ITEMS

In this department, in April of last year, some facts were presented about standardization of courses in the manual arts. In a further effort to get information on this important phase of manual arts teaching, we recently sent out a blank form covering desired information for all grades from the first grade thru the high school, for the past five years. The form was entitled "Changes in Manual Training Since 1907." The columns were headed "Subjects taught in 1907," "Subjects dropped since 1907," "Why dropped," "Subjects added since 1907," "Why added," "Time given to manual training in 1907," "Time given to manual training now." These forms were sent to supervisors of manual training in seventy large cities in different parts of the country. The form was accompanied by a letter asking the following questions:

1—What general changes have taken place in organizing and teaching the work in manual training? (Thoroness, correlation, vocational demands, etc.)

2—What specific changes have taken place in organizing and teaching (a) primary, (b) intermediate, (c) grammar, and (d) high school subjects? (exercise pieces, class projects, more or less time given to teaching design, proportion of individual to class instruction, etc.)

This questionairre met the usual fate. Replies were received from only eighteen cities, and these were in many cases incomplete. From the data received the following charts were prepared. Tho limited in amount of data the results may be considered fairly representative since the cities reporting are from all sections of the country. These charts, and comments gleaned from letters and notes, are not presented as the last word on the subject but rather with the hope of eliciting more accurate information from a larger number of places regarding the progress that has been made in manual training.

The cities reporting are Boston, Mass., Washington, D. C., Buffalo, N. Y., Indianapolis, Ind., Cleveland, Ohio, Trenton and Newark, N. J., Columbus, Ga., Pasadena, Calif., Grand Rapids, Mich., Norfolk, Va., Great Falls, Mont., Covington, Ky., Austin, Texas, Valley City, N. D., Kansas City, Mo., Salem, Oregon, and Peoria, Ill.

TIME ALLOWANCE.

In the following tables the time allowance for manual training has been placed in the first two columns, the first giving the time in minutes per week in 1907, the second in 1912. Comparison of the two columns in each table will give some significant information regarding the progress of manual training in the past five years. The importance of this time element cannot be overestimated. Not until manual training has a time allowance on the school program equal to that of the most favored subject on the program can it prove its true value, and not until then should comparisons of results be made critically. It will be seen by the tables that while certain cities have greatly increased the time, the average for primary, intermediate and seventh grades has not

	TIME		BOOK-MAKING ARTS			TEXTILE ARTS			PLASTIC ARTS
PRIMARY GRADES	In 1907	In 1912	Paper Cutting	Paper Folding	Cardboard Construction	Weaving	Raffia Work	Basketry	Clay Work
Austin	......	......	.....	.....	.....	.....	.....	.....	.....
Boston	30	30	*	.....	.....	.....	.....	.....	.....
Buffalo	60	60	*	*	.....	†	.....	.....	†
Cleveland	......	......	.....	.....	.....	.....	.....	.....	.....
Columbus	40	40	*	*	*	*	*	*	*
Covington	......	60	†	.....	†	.....	.....	.....	.....
Grand Rapids	......	......	.....	.....	.....	.....	.....	.....	.....
Great Falls ..	30	60	*	*	.....	*	*	†	*
Indianapolis ..	50	50	.....	.....	*	*	.....	.....	.....
Kansas City ..	......	......	.....	.....	.....	.....	.....	.....	.....
Newark	60	60	....	*	*	*	.....	.....	.....
Norfolk	30	45	*	*	*	.....	*	*	.....
Pasadena	30	30	*	.....	.....	*	.....	.....	*
Peoria	......	......	.....	.....	.....	.....	.....	.....	.....
Salem	......	......	.....	.....	.....	.....	.....	.....	.....
Trenton	......	60	†	.....	†	.....	†	.....	....
Valley City ...	40	40	*	.....	*	.....	*	*	*
Washington ..	45	45	*	.....	*	.....	.....	*	*
Total	415	520							
Average ..	41	48							

* Subjects taught.
† Subjects added since 1907.
‡ Subjects dropped since 1907.

CHART 1.

been increased over eleven minutes in the five years. The eighth grade shows a greater increase owing to the highest number of minutes being used for Indianapolis. This allowance of 360 minutes is given only in seven schools. Using the lower time given for that city, we find an increase of twenty-three minutes in the eighth grade average.

Taking each division separately, we find in the time column of the primary grades that four of the eighteen cities listed give no time at all to manual training, and two include handwork in the work of the drawing department. It is probably true, however, that in all of these cities handwork is a factor in the work of these grades. Of the remaining twelve the average daily time is not quite ten minutes, when twenty minutes is recognized as a fair time allowance for a recitation in other subjects. This indicates that manual training work is not done every day. Five cities give sixty minutes a week. The least time is given in Boston and Pasadena, one half-hour a week. Of the cities having manual training in 1907, Great Falls is the only one that has greatly increased the time allowance.

In the intermediate grades we find an average time of seventy minutes a week in 1907 and seventy-nine in 1912. Grand Rapids, Michigan, shows the greatest increase, the time having been doubled in the sixth grade. Norfolk and Great Falls also show an increase. Two hours a week is the largest allowance for these grades, an average of twenty-four minutes daily, which compares more favorably with the time given other subjects. Still it should be kept in mind that the standard subjects such as arithmetic and reading have not only a thirty-minute daily recitation period but a study period as well. This two-hour a week allowance is given in only three cities.

In the grammar grades we find, outside of the seven schools of Indianapolis with their allowance of six hours a week, that the highest time allowance is given in Buffalo, three hours a week, and the least, one hour a week, in Trenton, New Jersey. Grand Rapids is a close second to Buffalo. In a number of the cities listed, there are special schools in which manual training is being vocationalized partly or completely and in which a larger time allowance is made. It is a question if the establishment of such schools or centers should be allowed to halt the progress of manual training work in other schools. Should not manual training, considered merely as an educative force, if you will, be given a minimum time allowance of five hours a week in the grammar grades in all schools? Is this too high a standard?

In the high school the estimate of time is complicated by the fact that in some cities separate manual training high schools are maintained, so that the figures do not in every case represent the whole city. Mechanical drawing time has been included in the time report from some cities, probably. Where known, mechanical drawing time was not included in making the average. The higher number of hours given for any city was used in computing the averages. This gives as a result an average of 204 minutes a week in 1907, and of 352 minutes a week in 1912. This is an average daily period of seventy minutes. Five cities on the list show a daily average period of an hour and a half or more. It is evident that much more time is given to maunal training in the high school in proportion than is given in the grades. It will be noted that Washington, Boston, Buffalo, and Columbus, Georgia, have not

	TIME		MECHANIC ARTS				BOOK-MAKING ARTS		TEXTILE ARTS		PLASTIC ARTS	
INTERMEDIATE GRADES	In 1907	In 1912	Thin Wood	Whittling	Bench Work	Venetian Iron	Cardboard Construction	Book Binding	Weaving	Basketry	Clay Work	Chair Caning
Austin	......	......	...	...	...	...	...	...	...	...	...	...
Boston	120	120	...	...	*	...	‡	†	‡	...	...	...
Buffalo	60	60	...	*	*	...	*	...	...	..	...	...
Cleveland	60	60	*	...	...	...	...	...	...	..	...	...
Columbus	50	50	*	...	...	*	...	...	...	†	*	...
Covington	.....	75	†	...	...	...	†	...	...	...	...	...
Grand Rapids..	60	5— 60 5—120	*	...	...	...	...	...	...	...	...	...
Great Falls ...	45	80	...	...	†	...	*	..	...	*	...	..
Indianapolis ..	90	90	5-‡	...	...	...	..	†	...	...	†	*
Kansas City ..	......	120	...	...	...	...	†	...	...	...	...	...
Newark	60	60	...	*	†	...	...	...	...	...	...	...
Norfolk	45	75	†	...	...	‡	‡	...	...	‡	...	...
Pasadena	75	75	...	...	5-† *	...	‡	...	...	...	...	...
Peoria	......	......	...	...	...	...	...	...	...	...	...	...
Salem	90	90	...	...	*	...	...	.	...	...	...	...
Trenton	......	60	†	...	†	.	.	...	...	...	...	...
Valley City ...	80	80	*	...		..	...	...	...	...	...	..
Washington ...	75	75	...	*	...	...	...	...	..	*	...	...
Total	910	1035										
Average ..	70	79										

* Subjects taught.
† Subjects added since 1907.
‡ Subjects dropped since 1907.

CHART 2.

	TIME		MECHANIC ARTS					BOOK-MAKING ARTS		GRAPHIC ARTS			
7TH AND 8TH GRADES	In 1907	In 1912	Bench Work in Wood	Joinery	Cabinet Making	Metal Work	Venetian Iron	Printing	Book Binding	Mech. Drawing	Applied Design	Chair Caning	Vocational Work
§Austin.............													
Boston	120	120	*	...	...	...	...	...	...	...	...	...	†
Buffalo	7—60 8—90	7—80 8—180	7-† 8-*	...	...	...	‡	...	...	...	...	...	...
Cleveland	90	90	*	...	...	...	...	...	...	...	...	...	...
Columbus	90	90	*	...	...	...	...	...	...	...	...	...	...
Covington	60	80	*	...	...	...	...	...	...	...	...	...	...
Grand Rapids	90	135	*	...	...	...	...	...	...	...	...	...	...
Great Falls	45	80	†	...	...	...	...	...	...	...	...	...	...
Indianapolis	90	90— 360	*	...	...	†	...	†	...	†	...	...	...
Kansas City													
Newark	90	90	*	...	...	†	...	...	...	...	...	...	†
Norfolk	45	90	...	†	†	...	‡	...	...	...	...	*	...
Pasadena	75	75	*	...	...	...	...	...	...	†	...	...	...
Peoria	60	75	*	...	...	...	...	...	...	*	...	...	...
Salem	90	90	*	...	†	...	...	...	...	...	...	...	...
Trenton	60	60	*	...	...	...	...	...	...	†	†	...	...
Valley City	80	80	*	...	...	...	...	...	...	...	...	...	...
Washington	90	90	...	*	...	...	...	...	...	...	...	...	†
Total 7th grade	1235	1415											
Average	77	88											
Total 8th grade	1265	1785											
Average	79	111											

§ 8th grade in high school.
* Subjects taught.
† Subjects added since 1907.
‡ Subjects dropped since 1907.

CHART 3.

increased their time allowance since 1907. Columbus has a secondary industrial school. In addition to the time shown, several cities give from two to five hours a week to mechanical drawing.

SUBJECTS AND ORGANIZATION.

PRIMARY GRADES.

Very little information was given in the reports regarding primary manual training beyond the list of subjects. Little change has taken place in the subject-matter of the work in these grades. Paper-cutting and cardboard construction seem to be the subjects most frequently taught. Reference to the chart will show the number of cities teaching any one subject. Two cities, Newark and Columbus, include card-sewing among manual training subjects. Chair caning is taught fourth grade boys in Trenton. Indianapolis has added stick and block printing to the work of the primary grades. In Covington, Kentucky, work in paper and cardboard has been made uniform thruout the city. These subjects are taught for their cultural and ethical values, and in response to a need for such training in an industrial city. Buffalo reports the addition of clay work and weaving for the purpose of broadening the hand training and of giving greater variety. The last-named need seems to be well recognized, Boston being the only city in which the work seems to be limited to the use of one material. Lack of data makes it impossible to determine whether primary manual training work is more thoroly standardized than higher grade work, whether it is more closely correlated with other subjects, or whether there is a lack of organization and definite aim in the work. More information on the development of primary manual training and its relation to the general plan for the subject would be of interest.

INTERMEDIATE.

In the subject-matter of the intermediate grade manual training may be noticed a decided tendency toward woodwork, either thin woodwork or elementry benchwork. Weaving and bent iron are being eliminated from these grades. Cardboard work is still favored in four cities. Bent-iron work survives in but a single instance. Clay work is found in these grades in Columbus, and under the name, "pottery," in Indianapolis. Scroll-sawing is taught in Newark only, of the list; chair caning in Indianapolis, stenciling in Great Falls, joinery in Norfolk, and mechanical drawing in Pasadena.

Some details of organization or purpose are available from a few cities. In Boston woodwork was substituted for other subjects in the intermediate grades in order to provide more shopwork for boys who leave school at fourteen years of age. In Newark scroll sawing and simple benchwork were introduced so as to extend the pupils' knowledge of tools and processes of construction, and to give constructive experience in a more practical way. In Indianapolis, until this year, there were special teachers for the intermediate grade manual training, but this year the regular grade teacher is giving the work with the help of the supervisor who meets classes in each district at least once every three weeks.

Coping saw work is given in the first half of the fourth year. This is followed thru the fifth year, with thin woodwork with such models as a blue-print frame, post card rack, and bird house. A few simple problems in bookbinding are given in these grades.

GRAMMAR GRADES.

Benchwork holds an undisputed place in grammar grade manual training. It is supplemented by mechanical drawing in four cities. Indianapolis teaches printing, also, in these grades. The supervisor writes that in the sixth, seventh, and eighth grade benchwork, in Indianapolis, they are rapidly doing away with the idea of a course of study based on certain models, believing that the use of tools and tool processes can best be taught if the pupil is allowed choice from a group of models, which of course conform to the grade of work the pupil is taking. Metalwork is also taught in the grammar grades in Indianapolis. Venetian iron was still in favor for these grades as late as 1907 in two cities but has since been dropped. Intermediate work in advanced form is continued in Norfolk and Great Falls.

A number of the cities in the list have prevocational work, either in separate industrial schools, in ungraded classes, or in certain shop centers. The subject matter of this work differs with the locality.

The need for a vocational trend in grammar grade manual training is suggested in some reasons given for emphasizing woodwork: "The boys and girls are enabled to much more readily serve their apprenticeship with a higher respect for labor;" "to prepare the boy to meet the needs of the time."

In Peoria, several subjects which were being tried out in the grammar grades were dropped in order that benchwork and mechanical drawing might be standardized. The supervisor, A. P. Laughlin, believes that these subjects, bookbinding, printing, pottery, sheet-metalwork, will find their places in the course of study again, but that the grade teachers and the public must first be made to see their value.

We quote two replies which may throw light on grammar grade manual training problems. W. E. Roberts, supervisor in Cleveland, says:

"In the regular manual training work of the four upper grades, there has been comparatively little change in the organization of the work since 1907. We have always given emphasis to thoroness and to correct manipulation in the use of tools and materials. In this sense, only, can we claim to meet vocational demands. Correlation is an exceedingly difficult matter to handle where manual training is considered by the teachers as a thing apart from the regular school work. Our efforts have been, so far as possible, along the line of relating the work to the home, school, play, and community interests of the child.

No exercise pieces, as such, are given in any of our manual training work. Some class project work is given in each advanced class, such as equipment for dining service in domestic science rooms, and furniture for school offices and halls. Particular emphasis is given to the teaching of design in outline, form, and color as applied to woodworking. Emphasis is also given to the development of individual initiative on the part of the pupil. All work involving new

High School	Time in 1907	Time in 1912	Wood Turning	Bench Work	Cabinet Making	Joinery	Machine Shop	Forging	Pattern Making	Foundry	Mech. Drawing	Art Metal	Sheet Metal	Carving
Austin	300	400	*	*	...	...	*	*	‡	‡	*	†	...	...
	90	90												
Boston	315	315	*	*	...	...	...	...	...	...	...	*	...	...
Buffalo	270	270	...	...	*	*	*	*	*	...	...	...	...	...
Cleveland	....	....	...	...	...	...	...	...	...	...	...	...	...	...
Columbus	60	60	*	*	...	...	...	...	...	...	...	...	...	...
Covington	90	450	†	*	†	...	...	...	...	...	†	...	...	...
Grand Rapids	....	450	†	...	†	...	†	†	†	...	...	...	...	...
Great Falls	....	....	...	...	...	...	...	...	...	...	...	...	...	...
Indianapolis	....	450	†	...	†	†	†	†	†	†	...	...	...	...
Kansas City	....	....	...	...	...	...	...	...	...	...	...	...	...	...
	90	120												
Newark	180	360	...	*	*	*	†	†	†	†	†	...	†	*
		150												
Norfolk	....	900	...	...	†	...	†	†	†	...	†	...	...	...
Pasadena	225	450	†	†	...	...	†	†	†	...	*	...	...	...
Peoria	....	....	†	*	...	...	†	...	†	...	*	...	...	...
Salem	....	270	...	...	†	†	...	...	...	...	†	...	...	...
Trenton	....	120	†	†	...	...	...	...	...	...	†	...	...	...
Valley City	200	240	†	*	...	†	...	...	...	...	...	...	...	...
	100	100												
Washington	200	200	*	...	...	*	*	*	*	...	*	*	...	...
Total	1840	4935												
Average	204	352												

* Subjects taught.

† Subjects added since 1907.

‡ Subjects dropped since 1907.

CHART. 4.

principles is carefully presented thru class instruction and demonstration. Much importance is attached to the work of the teacher with the individual pupil."

Eli Pickwick, Jr., of Newark, writes:

"We have always insisted on old-fashioned, thoro work, and have always related our work to the thought of the school where possible.

We make very few exercise pieces. All the work is on real things. Our manual training teachers have nearly all taken courses in design, so that with no more time given to design we get more artistic construction. Our mechanical drawing, in the elementary grades, is given by class instruction. The shopwork, after the first lessons, is given by individual instruction."

HIGH SCHOOL.

Among high school manual training subjects wood-turning seems to be most favored, being taught in ten of fourteen cities. Mechanical drawing, machine shop practice, and benchwork are next in order. Lack of facilities affects foundry work. Art and sheet metalworking are taught in surprisingly few places. One city in the list, Pasadena, has recently added printing, a subject of growing popularity. Newark has the greatest variety of subjects. Washington, D. C., gives applied design a place as a subject in manual training. Comment in the reports indicates a growing recognition of the importance of design in its relation to constructive work. Data for Cleveland, Ohio, is not shown on the chart. R. L. Short, principal of the West Technical High School of that city replied to the enquiry: "We teach no manual training. As far as possible we devote shop and drawing time to trade lines. We teach no turning and only one half-year of cabinet work. Our work is pattern-making, foundry, forging, machine shop, electrical construction, and all types of mechanical drawing." In what way these subjects differ in content or method of teaching from the subjects, given under the same names, as parts of manual training courses in high schools in other cities is a point which needs elucidation.

The reasons given for the introduction of new subjects may be of interest. The new subjects in Pasadena were added to fill a demand for a polytechnic course so that those desiring such work would not have to attend a private institution. Art metalwork was added in Austin, Texas, because of its richness in opportunity for original design and its variety. It is thought that the practice in soldering, etc., will be of great value to pupils in everyday life. The director at Austin, E. S. Blackburn, says; "We have been making an effort to bring out the art side of our subjects and have introduced considerable design into the wood-turning and art metalwork with a good deal of satisfaction to the students and ourselves. In fact we do not follow a 'model system' slavishly after the first half year's work." The new manual training high school at Newark was organized for the purpose of more completely fitting boys for the industrial life of Newark. Emphasis is laid on commercial methods of procedure and on technique. In Covington, Kentucky, a four-year, industrial course of study has been introduced in the high school on the same basis as other courses. Harry E. Roberts, supervisor, says: "The work has been put on a general organized basis with a special aim in each subject. Emphasis is placed on meeting the vocational demands of the community. Each problem

leads to the development of the next. The industrial course furnishes preparation for technical schools, or better preparation for those compelled to earn a livelihood at the completion of the high school course."

PRINTING IN THE SCHOOLS.

In the high school of Salina, Kansas, is a class in printing, developed in the manual arts department. Two years ago the superintendent of schools, John Lofty, finding that the board of education did not wish to incur the expense of a printing course, borrowed money, four hundred dollars, from different sources, as a loan to the students so that they might purchase their own outfit. Two months ago the account was repaid in full, with interest. The department pays for itself, the board of education paying for nothing but the stock on which their own jobs are printed.

The equipment includes two new cases of 8 point, and two cases of 10 point magazine type, several fonts of 6, 8, 10, 12, 18, 24, and 36 point display type, the necessary job sticks, galleys, imposing stone, etc., and a 10x15 Chandler & Price job press. The board of education soon realized the benefit they were receiving from the class, in getting a large share of their printing done free of charge, and added a 25″ paper cutter. This cutter is of use in many ways in the school system.

The class was fortunate in securing the cooperation of the local printers from the first, and it gladly acknowledges that much of its success has been due to these printers who have so willingly given helpful suggestions and advice.

The course in the printing class includes proof-reading, punctuation, type setting, job work, technical terms, composition, imposition, "ad" setting, cleaning, distribution, binding, and platen presswork. The class prints enrolment cards, information cards, office blanks, business notices, news sheets, receipt books, tickets, dodgers, posters, bills, etc. It also prints a monthly school paper in magazine form, the English classes furnishing the copy.

Eighteen boys are taking the work this year. There has been as high an enrolment as twenty-six. The class period is eighty minutes a day. The boys are left much to their own resources, at times, as the director, Karl Miller, has large classes in woodworking going on at the same time. Two text-books are used, and several reference books and magazines are at hand which are in constant use.

The Venice Union Polytechnic High School, of Venice, California, has a printing department under the direction of Edwin Ross. After less than three months work in the department the students have produced Christmas greetings, cards, mottos, and school printing of a high degree of excellence.

The equipment for the department cost $900 and includes a 12x18 Gordon press. The equipment will shortly be enlarged.

Mr. Ross's preparation for teaching this subject may be of interest to those dealing with the problem of the short supply of teachers for such subjects. Mr. Ross learned the essential processes of the printing trade in a newspaper office when a boy. After several years' experience in teaching the manual

arts, he was asked last spring to organize a printing department. He spent the summer in two ways, in intensive reading on the subject at the State University, and in investigating up-to-date methods and new ideas in the print shops and printers' supply houses in several coast cities.

All those who revere the memory of Otto Saloman, that great pioneer in the field of educational handwork, will be glad to learn that a committee has been organized in Sweden to receive contributions for a portrait bust of Saloman, to be placed in the school at Nääs. Many in this country will wish to contribute and may do so thru Mr. Gustaf Larrson, of the Sloyd Training School, Boston, who will forward to the committee the contributions of American friends, with their names and addresses.

Menominee, Michigan, is to have, for the beginning of next year, a new building for training in domestic science and art, manual training and physical culture. The building itself is supplied in the regular manner of public taxation by vote of the people. The entire equipment of the gymnasium and domestic science and art departments, and a part of the manual training equipment is furnished by individual public spirited citizens.

The plans, as adopted by the board of education, provide, for the domestic science and art department, a sewing room, fitting room, kitchen, dining room, laundry and all necessary cupboards, cabinets and pantries. The physical training department consists of a gymnasium, running track, dressing rooms, shower baths, rest rooms and all conveniences usually found in this connection. The manual training department comprises a woodworking department of bench room, wood-turning, pattern-making, and a mill room, all covering 3500 square feet of floor space. The metalworking department is equipped for forging, with a space for foundry, concrete construction, and bricklaying as a future development. The drafting room will accommodate twenty-five to thirty benches for mechanical drawing. Suitable tool rooms, store rooms, and lockers are provided.

The purpose of the new school is to provide more and better practical training for those who must begin life without advanced education. The boys are to be helped to become better wage earners, home providers and citizens, the girls to become better home-makers, housekeepers, home nurses and helpmates. The physical training department will form a nucleus about which to make the school a social center to counteract undesirable attractions, thru contests and entertainments, library and gymnastic.

The content of the work will at first be manual training applied as directly to vocational work as possible, with the intent of developing into trade training as demanded by the progress of the work and the desires of the public.

In both domestic science and manual training emphasis will be placed on the two upper grammar grades and the first two high school years. Special classes will be offered for those pupils who are one or more years behind their grade. The records of attendance and falling out of school indicate the need of special training for these people for their life work. The falling off in attendance up to the middle of the sixth grade is not alarming, but as com-

pared with the attendance of the sixth grade that of the seventh shows a shrinkage of one-fifth, that of the eighth two-fifths, and that of the beginning of first year high school a shrinkage of five-eighths.

A special course has been organized in advance for those who expect to attend high school for only two years. The student may decide later to remain the four years and fill out his course with regular accademic subjects for graduation. This course consists of a combination of domestic science and commercial work for the girls or manual training and commercial work for the boys.

A college preparatory course is also offered in both manual training and domestic science and art in accordance with the requirements of the University of Michigan, and other universities of the north-west.

R. D. West is director of manual training in Menominee.

Francis L. Bain, of the Boston Manual Training Club, reports the following news:

A new building for the technical department of the Everett, Mass., high school is being built, and will probably be all fitted up and in running order sometime in February. This building will have four rooms for the technical or shop department, also two drawing rooms, and a blue-printing room, and, when finished, all the present equipment will be moved thereto, together with three thousand dollars' worth of additional equipment.

Students of the technical department have undertaken the contract for making about two dozen drawing tables of the latest type for one of the new drafting rooms, and in this connection it may be stated that these students have already over 1600 hours of school contract work to their credit within two years.

The sloyd teachers of India held a two-days' meeting at Mysore, the last of October, in connection with the Mysore Manual Training Teacher's Association of Bangalore. Much of the time of the conference was occupied with the discussion of details of organization and administration. That members of the conference are alive to the new spirit in education is shown by the topics of general interest on the program, such as, "The Introduction of other Branches of Manual Training into our Schools," and "Fresh Fields and Pastures in Education." These two subjects were discussed by Mr. T. Visweswariah. Mr. H. Krishniengar read a paper on "The Educational Aspects of Sloyd."

The faculty of the Shaw High School in East Cleveland, Ohio, are rejoicing in the prospect of additions and remodeling, since at the regular election in November the voters approved a bond issue which will make available for this use $100,000. The high school has grown from an enrolment of seventy-five to five hundred and twenty since the present building was begun.

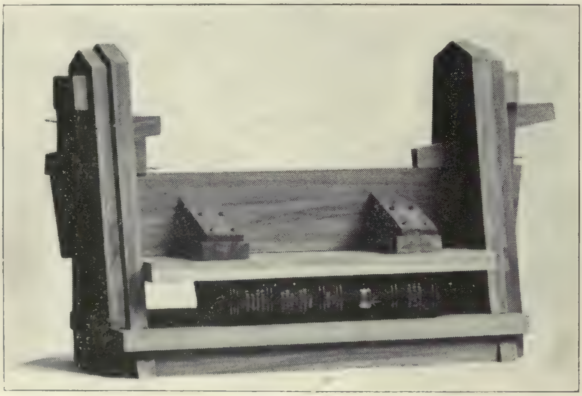
The improvements contemplated include rooms for the present two-year course in manual training and possibly additional rooms for third and fourth year work; a domestic science room with adjoining demonstration room and model dining room; a sewing room with adjoining fitting room; rooms

for arts and craft work for the girls; a room for printing; and rooms for a commercial department. The present woodworking room will probably be used as a shop for a grammar school which is located just across the street from the high school.

In Glen Falls, New York, the three departments, art, manual training, and domestic science, have been combined and reorganized as one department called industrial and household arts, under the direction of S. Horace Williams. The aim of the reorganization is to bring the courses in the three lines of work more closely together, regarding them as related parts of a synthetic whole. The art will become more and more applied art, and will deal also with appreciation of the beautiful, and will not stop with the manipulation of colors. Design taught by the art teacher will be applied in shopwork and by the teacher of sewing.

The teachers of the work in this department meet once a week to make reports and discuss problems of alteration and correlation. Superficial and forced correlation will, it is hoped, be avoided, but the arts will be brought close to the lives of the children and all other school work will be enriched.

The development of this plan will be observed with interest and details will be given when available.



BOOK PRESS, COMPETITIVE DESIGN. CHICAGO TEACHERS COLLEGE.

FOREIGN NOTES

By H. Williams Smith.

INTRODUCTORY NOTE.

It was with alacrity and pleasurable anticipations that I accepted the offer of the editor to send to this magazine a contribution for each issue, which shall contain, so far as I can compile them, the latest facts about manual training in the British Isles, and also what else I can pick up on the same subject for Europe as a whole. It may be assumed that as we are very glad, here in Britain, to learn what you Americans are doing, an exchange of news will not be unwelcome to you. The editor expressly demands from me facts and not opinions, although I am sure he is quite well aware that the opinions of the manual training world today will be the facts of the whole educational world tomorrow. While I demur slightly at his stipulation, seeing that I can always put my pen on more opinions than facts at any time, yet I do not question the wisdom of his instruction. Facts let them be, then, though, in the very nature of things, manual training is about as little productive of news as any other thing going. I have tried to convince myself, but without success so far, that I am now to be a regular contributor to a foreign magazine, but the bonds of common language, of a common history up till 1776, and of common professional interests and aims, are too much for me. The States are even less foreign to me than is Canada, and Woodrow Wilson means more to me than King George; and, further, Wilson means more to me as teacher than as President. The man who does something in or for education—that noblest undertaking of man's—is the man whom I honor; and I honor myself in so far as I endeavor to promote true education. For any cause of less worth than education I do not suppose I should ever put pen to paper. That pen is now at the service of my American confreres in these columns. I wish my ability in using it were at all commensurate with my earnest desire to be of real help to them in my scribblings. I can only promise that I will do my best; that if I see an opinion sticking it's head round the corner, I will throw an out-of-date manual training text-book at that head; but that facts shall always receive the glad hand, and be invited to take a trip across the Atlantic.

The Daily News, that London newspaper of which Charles Dickens was the first editor, held, during the Christmas Holidays, at Olympia, London, a "Children's Welfare Exhibition." Manual training schemes and notions were here well to the fore, and one of the leading demonstrations was conducted by Mr. J. C. Hudson, whose "Home School" at Highgate is largely concerned with learning by doing. It is to be hoped that the success which attended this experimental exhibition will be such as to warrant it becoming an annual fixture.

Miss K. Dalley, an L. C. C. mistress, has invented a method for the teaching of arithmetic, which, according to those best able to judge, promises to be of great utility. The invention is a simple apparatus for demonstration purposes, which will cost only a few shillings. The London County Council—which has a model of her invention—recommends that she is "to be permitted to patent the invention, subject to the condition that the Council be allowed to use it without payment, should it so desire." This is exceedingly kind of the Council. We wonder if this canny policy could be matched by any school board in the United States.

The Handicraft Report recently issued by the London County Council has been very freely criticised by several pens since it was published, and the criticism has been even more adverse than favorable. The report, on the whole, is certainly disappointing, and errs decidedly in the way in which it has overdone the spirit of sweet reasonableness. It has tried to serve two masters, to sit on two stools, and, endeavoring to please everybody, has apparently but little pleased anybody. It does not compare favorably with its companion report issued by the Board of Education, which was the work, not of a representative conference, but of a few inspectors. The inspectors have scored this time. But if the schools accept both reports, and speedily put them to the test in practice, both reports will be justified.

Dr. John Adams, Professor of Education in the University of London, has resigned his post as Examiner in the Theory of Manual Training to the City and Guilds Institute. The certificate issued by the City and Guilds is the premier qualification for a manual training teacher, recognized throughout the British Empire. Considerable regret will be felt by the teachers at the resignation of Professor Adams.

In the quarterly report of the Leicestershire Education Committee, the superintendent of school gardens deplores the lack of sympathetic cooperation between managers and teachers in rural districts in regard to gardening and manual instruction. He recommends that a small plot in each school garden should be reserved for experiment and purely scientific purposes, such as the cultivation of economic plants, poisonous plants, and exotic plants of botanical interest.

Instruction is now being given to children in many English elementary schools in horticulture, and most education committees are giving encouragement to its extension, especially in rural areas. It is only of late that the development of school gardens has made any progress in England, and even in Germany. We believe that in all the important area of London County Council government, there is but one school garden on the edge of a northern suburb.

Dr. Kimmins, Chief Inspector, L. C. C., and a man of genial and inspiring personality, recently addressed a largely-attended meeting held in the Lecture Hall, Kingston Library, on "The Future of Manual Training in the Schools." That future, according to the learned Doctor is one of assured success, because handwork is "now being introduced in the schools, not for empirical reasons, but for sound psychological and physiological reasons." When such men as Dr. Kimmins seek to serve it, manual training may be said to be coming in to its own in Britain. It is interesting to note that Dr. Kimmins, an ex-president of the Educational Handwork Association calls it "manual training". There is a regrettable tendency in Britain to give all kinds of names to what most of us mean when we say "manual training." It is for the old and most widely recognized term that the present writer has always contended, and he notes with pleasure an increasing tendency to use it. It is highly desirable that one term and one term only—"manual training"—should be used to denote all phases of education through manual occupations.

The Rt. Hon. J. A. Pease, president of the Board of Education, at Shoreditch Technical Institute, in dealing with the work of the centre for the training of manual instructors, said that they were suffering from a dearth of teachers, and teachers were needed who knew not only the theoretical side of their work, but were practical workers themselves.

That last note reads strangely, when we consider that the manual teachers of London are engaged in a prolonged but sustained struggle for an increased maximum in salary. The maximum, which, twenty years ago, applied to *all* teachers, now discriminates against manual teachers, who have remained stationary while all other grades have gone ahead. In that twenty years, cost of living in London has increased 25%, and the demands on the teacher more than cent per cent.

There is much fluttering in the dovecotes of Scottish manual training teachers over various suggestions by them, and to them, concerning the obtaining of a diploma of worth superior to any diploma hitherto granted. But our 'brither Scots' have an excellent knack of taking care of themselves.

The L. C. C. is proposing to convert the art-rooms of its elementary schools into practical workrooms. This, broadly regarded, may work out as a reform, so long as art is not totally excluded from such workrooms.

The proposal to establish, in a London public school, a boot-mending class, elicits from *The Schoolmaster* the opinion that "motor activity, an educational force, is fast being wrested to mere utilitarianism." Is "mere utilitarianism" a

crime in education? If the writer of that opinion saw some of the shoes inhabited by the children, he would re-consider his position.

There are now 96 school-gardens in the county of Wiltshire. A few women teachers are engaged in such work, and others are qualifying to do so. Recently a limited number of children have received lessons in thatching, bee culture, poultry-keeping, milking, and dairy work. More utilitarianism!

A re-modelled scheme of domestic instruction has been approved for the city of Carlisle. During the past year 1,116 girls received instruction in cookery for ten weeks, 360 girls received instruction in laundry work for five weeks, and 180 girls instruction in house-wifery for five weeks. Still utilitarianism!

The Educational Authority for the Province of the Cape of Good Hope considers it indispensable that the woodwork rooms and also the room for the related drawing should, wherever possible, form part of the main school building, as, apart from other considerations, it is undesirable that such rooms should be scattered about the school grounds.

The Higher School of Instruction in Agriculture and Housekeeping for girls, at Grignon in France, is now in full working order, and was attended on opening by a greater number of students than had been expected. It aims to prepare teachers and also daughters of farmers for better work in their own spheres. Quite a glowing account of the new school is given in a recent bulletin issued by the International Institute of Agriculture.

CLASS IN HOUSE FRAMING AT HIGH SCHOOL, FORT DODGE, IOWA, E. T. SNIVELY, SUPERVISOR.

REVIEWS

Working Drawings. By Arthur B. Babbitt, Teacher of Mechanical Drawing, Public High School, Hartford, Conn. Henry Holt & Company, New York, 1911. 7½x5 in.; 201 pages; price, $1.00.

It would be clear to any teacher of mechanical drawing reading this book that its author was an experienced teacher, even if the reader had not seen the statement in the preface to the effect that the book is the result of a ten years testing process in the classroom. No teacher of brief experience would have brought together so many simple problems in practical drawing and arranged them in groups to meet the needs of individual students. The grouping of problems is not a new idea nor is this book the first one to present a collection of problems, but perhaps no other book has carried out this idea so fully. For example, under "cylindrical work," instead of giving one object for Plate 10, the author gives twelve, and four more for "extras". Another good feature of the book is giving the pupil a sketch of two views of the object and requiring him to read these, draw them, and also a third view which is not given in the sketch. Neither is this a new principle, but it is a good one and ought to be in all books of elementary problems in the future. For the earlier plates the problems are given in the form of dimensioned perspective sketches. The author believes in home work for pupils in mechanical drawing. He suggests that the student be required to work out freehand at home, or out of class hours, his problem for each plate. "The course may be given without home work, but the author is a firm believer in home work."

The book represents one year's work, two forty-five minute periods a week.

Printing and Bookbinding. By S. J. Vaughn, Head of Department of Manual Arts, State Normal School, De Kalb, Ill. Public School Publishing Co., Bloomington, Ill., 1912. 7¾x5½ in.; 125 pages; price, $1.00.

This is really two books bound as one. The first is on the Art of Printing, and the second on Bookbinding. The first covers type setting, rules of composition, proof marks, imposition, presswork, distributing, equipment and its cost, the arrangement of equipment, and then it tells you what to print and how to proceed. The second part treats of case binding, rebinding, etc., and ends with a course of instruction in binding for all the grades of the elementary schools, from the first to the eighth inclusive.

This book should give just what teachers want to know on the subjects treated, because Mr. Vaughn is a trained and experienced teacher and a practical printer. He was a printer before he was a teacher of manual training. We are glad to welcome this first book we have seen on this new line of manual arts work. It will undoubtedly give a definite impulse to such work in public schools.

Popular Mechanics Year Book for 1913. The Popular Mechanics Co., of Chicago. 9½x6½ in.; 213 pages; price, 50 cents, prepaid.

This is a reprint of the Shop Notes department of Popular Mechanics for

the past year and is therefore full of "kinks" and ways of doing things. On the cover is printed, "595 easy ways to do the hard things in every trade and calling." "Mechanically-inclined boys" as well as their elders will find this a storehouse of ideas.

Festivals and Plays. Percival Chubb and Associates. Harper and Brothers. 5½x8 in.; 403 pages.

Mr. Chubb and his associates wrote this book out of their experience in producing festivals and plays in the Ethical Culture School, in New York, and it is therefore rich in practical suggestions. The appendix, with reference material, programs, costume descriptions, etc., is a treasury in itself. The discussion of all phases of pageantry and play-giving is very complete and well arranged, so that those who have come under the irresistible spell of festival giving will find in this book just how to go about it, how to lead up to the proper spirit in the children, how to plan all the details. Attractive half-tones are an interesting feature of the book.

Theory and Practice of Teaching Art. Arthur Wesley Dow, Teachers College, Columbia University. 73 pages; 6x9 in.; price, $1.50.

This is the second edition, with additional text and illustrations, of Professor Dow's invaluable book. He discusses the purpose of art teaching, and then the two methods, academic and synthetic. The synthetic method, which approaches art teaching from a new standpoint, is taught by Professor Dow in his classes. It is quite distinct from previous methods and its theory and applications as discussed and illustrated in this book should be read by every teacher of art and every supervisor of manual training. The latter will see that the new method has an important bearing on the close relation between the fine and the manual arts.

Practical Dressmaking Up to Date.
The Elements of Dress Pattern-Making.
French Pattern Modelling for Professionals. By Amy J. Reeve. Longmans Green & Co., 1912.

Here are three inexpensive books of diagrams, with sufficient text to make them clear, giving the essentials of the art of dress-cutting as taught to technical classes under the London County Council. They are also adapted to the use of home workers and professionals. All three are practical, and may be thoroly commended. The second is especially suited to beginning classes in schools, while the third is hardly needed in schools, except advanced technical schools, but is valuable for professionals.

Alphabets and Other Material Useful to Letterers. By Charles Rollison. D. Van Nostrand Co., New York, 1912. 6x9½ in.; oblong; 33 pages; price, $1.00, net.

This is a book on engrossing. It gives suggestions concerning the selection of materials and designing, but the book consists chiefly of plates of alphabets, monograms, texts, and ornaments. These are carefully selected and well reproduced.

Artistic Leather Work. By E. Ellin Carter. E. and F. N. Spon, Ltd., London, 1912. 7¼x5 in.; 51 pages; price, $1.00.

This is a hand-book for art workers. It gives illustrations of suitable tools, diagrams to show the cuts, designs appropriate to leather tooling and a few half-tone plates of fine pieces of finished work. It treats of several methods of decorating leather, but gives the largest amount of space to incised work. This book should not be classed with inferior handbooks for amateurs; it is a brief, direct treatise on the subject.

Experimental Wireless Stations. By Philip E. Edelman. Published by the author at 2432 Lyndale Ave. South, Minneapolis, Minn. 7¾x5¼ in.; 224 pages; price, $2.00.

This book, as the author says, "is intended particularly for experimenters, that sane body of voluntary workers who take up the art as a hobby, study, or spare-time vocation, and who are generally misnamed amateurs." The main object of the book is to standardize "amateur stations under the restrictions of the new wireless law". The book covers theory, aerials, grounds and lightning protection, the transmitter, calculations for circuits, transformers, inductance, tuning, wireless codes, rights of the experimenter, etc., etc. It is well written and illustrated with eighty diagrams.

A Text-Book of Design. By Charles Fabens Kelley and William Luther Mowll. Houghton Mifflin Company. 10¼x7 in.; 134 pages; price, $2.00.

This book is designed to be used as a text-book for advanced students. The theory of pure design is presented in a very clear and comprehensive manner. The fundamental principles known as sequence, rhythm and balance have been illustrated by the rudimentary forms of spots and lines. Spot, line and area composition in repetition and field have been thoroly presented, many illustrations supplementing the text. One chapter is devoted to values and their combinations in design, another to the theory of color, which is illustrated by diagrams. A short chapter on lettering as governed by the principles of design, is followed by one on design in architecture.

The book contains 147 illustrations, many of which are Japanese stencils, interesting Coptic textile designs, and other historic textiles and ornament.

The book is valuable as a text-book for the study of pure design.

—ADELAIDE MICKEL.

The Boy's Book of New Inventions. Harry E. Maule. Doubleday, Page and Company. 5¾x8¼ in.; 374 pages; price, $1.60, net.

This book tells in a clear, forceful manner about the new developments in the field of invention, including aeroplanes, motion-picture machines, artificial lighting, the Tesla turbine, concrete inventions, and wireless telegraphy, with many others. A large number of good half-tones accompany the text.

A book of this sort will prove both fascinating and stimulating to boys of a mechanical bent. It should find a place in the classroom library of manual training teachers, and will furnish a source of information for the teacher as well as a source of interest for the boy. It will help in the good work of broadening the "industrial intelligence" of manual training students.

Architectural Drawing Plates. By Ralph F. Windoes, Director of Manual Training, South Haven, Mich. Published by the author. 7x9 in.; 18 plates; price, 50 cents.

The first two of these give architectural conventions, such as the best methods of representing doors and windows on plans, electric wiring, materials of construction, stairways, fire places, etc. Then follow plates of floor plans, elevations, details of mouldings, etc., of two houses.

RECEIVED.

Mission Furniture. This is Part III of the "How to Make It" series issued by the Popular Mechanics Co. of Chicago. The price is 50 cents.

Annual of the Peoria County Schools. Issued by the County Superintendent, J. A. Hayes. It contains the report of the Institute held last August, in which a large amount of time was given to woodwork, drawing, metalwork, and agriculture. Photographs of the shops and of some of the construction work done in connection with the drawing are reproduced.

Cleveland Public Schools. Report of the superintendent for 1910-11. The Cleveland report has been interesting for several years, but perhaps no report has been more so than the present one.

Course of Study for the Common Schools of Illinois. This is just off the press. It is published for the Illinois State Teachers Association by C. M. Parker, Taylorville, Ill. Price, 30 cetns. It contains outlines for drawing, constructive work, design, manual training, agriculture, and, in fact, all the subjects taught in the common schools of the state.

Report of New York Public Schools. This is the fourteenth annual report of the superintendent by Dr. William H. Maxwell, but in reality is a report on drawing and manual training. It includes "Art in the High Schools" by Dr. James P. Haney, "Drawing in the Elementary Schools" by Frank H. Collins, and "Shopwork in Elementary Schools" by Walter S. Goodnough.

Carnegie Technical Schools, Pittsburgh, Pa. Announcement of the new course for industrial teachers.

The Work of the Country Schools. A bulletin prepared by the faculty of the Iowa State Teachers College, Cedar Falls, Ia. The sixteen pages on manual training bring together many helpful suggestions.

FIELD NOTES

Thursday, November 14th, the cornerstone of Buffalo's new technical high school was laid. This was the occasion for great rejoicing in school circles in Buffalo, for the growth of high school manual arts work has been seriously hampered by lack of facilities. Rapid expansion will now be possible. F. H. Wing, the supervisor of manual arts, is to be congratulated on the opportunity to complete and perfect the system of manual training, which has been brought to an enviable condition in both the elements of course of study and time allowance.

Miss Flora E. Anderson, of the domestic science department in the high school, Somerville, Mass., has been appointed director of household economics in the Newton Technical School.

The boys of the manual training department in Grand Rapids will make the Indian clubs and dumb-bells to be used in the classes in physical culture. This is a very practical problem in wood-turning.

J. Edward Goss has been appointed instructor in manual training in the high school at Fall River, Mass. Mr. Goss has had several years practical experience with a machine company in Providence.

The United States Civil Service Commission announce the regular competitive examinations for positions as teachers in the Philippine service for March 12th and 13th, 1913. Industrial teachers are in great demand, especially teachers of carpentry, forging, and machine shop practice. There is also a need for men with sufficient knowledge of machinery to run small sawmills. In writing the Civil Service Commission at Washington, D. C., for information, it should be stated whether the applicant wishes to be examined for position as assistant, teacher, or industrial teacher.

The school board of Cheyenne, Wyoming, has voted to establish departments of manual training and domestic science in the schools, to be ready for the opening of the next school year.

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FIELD NOTES

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Manual training and domestic science departments have been organized in the high school at Greenville, Texas.

Dallas, Texas, has a new high school in which a manual training equipment has been installed. This gives Dallas three high schools with manual training courses. At the Central High 246 boys are enrolled in manual training.

A new departure in Lincoln, Nebraska, is the opening of school shops on Saturday. Four shops have been thrown open to the use of students, or others, who are over thirteen and not below the seventh grade in school work. Each of the four shops will give instruction in a different line of work, one giving woodwork, another art metal, another book-binding, pottery and basketry, and the fourth, advanced cabinet-making. Pupils must pay for materials and damage to equipment.

A large cabinet to be used for exhibiting elementary manual training work has been placed in the East Union School in Springfield, Mass. Such a provision for a more permanent exhibit than is usually possible in the grade schools should serve as a stimulus to increased endeavor among the boys and girls. The desire to have one's work seen and appreciated is even a more potent motive with children than with adults.

Donald Ferguson succeeds Ralph Heberling as director of manual training at the Central High School, St. Paul, Minnesota.

A course in sign painting has been established in the high school at Altoona, Pennsylvania.

The manual training department of the Bisbee, Arizona, schools is growing rapidly under the direction of F. S. Hamilton. A recently installed course in art metal met with instant popularity.

Brookline, Pennsylvania, now has manual training courses, with pupils coming from four schools. A. J. Miller is in charge of these classes.

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FIELD NOTES

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Parkersburg, West Virginia, has several new teachers in the manual training and domestic science departments of the public schools. Ralph Bloss, a graduate of the Oklahoma University, succeeds B. B. Coolley as manual training teacher in the high school. Miss Helen Haldy is newly appointed as assistant teacher of domestic science in the high school. Miss Haldy is a graduate of the Illinois Woman's College.

In the grades, Miss Isabel Maris is a new teacher of domestic science at the McKinley school, Miss Eva Davis teaches domestic science at the Sumner school, George H. Mowbray teaches manual training at the Sumner school.

Guy H. Nichols will have charge of the manual training in Grinnell, Iowa, this year.

Miss Anna Murray is supervising manual arts work in San Francisco. Miss Murray has charge of the first five grades in manual training and sewing in the grades and the high school.

Harvey A. Tice is head of the manual training department in the schools of Fond du Lac, Wisconsin, this year.

Manual training has been added to the course of study at the Trinity County High School, Weaverville, California. L. A. Buchanan is in charge of the course.

Manual training and domestic science have been established in the high school at Albany, Oregon. A. E. Hudson is instructor in manual training.

Wilson H. Henderson, former director of manual training in Springfield, Illinois, is in Hammond, Indiana, this year.

C. E. Howell is the new director of manual training at Decatur, Illinois.

Orting, Farmington, and Kennewick, Washington, have established courses in manual training and domestic science this year.

R. R. Parker has charge of the manual training in the Turlock, California, high school this year.

Coshocton, Ohio, has new departments of manual training and domestic science this year.

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FIELD NOTES

(Continued from p. XVII)

Dowagiac, Mich., has a course of manual training this year.

F. L. Knott is supervising manual training at Merrill, Wisconsin, this year.

Miss Florence M. Pettee, formerly instructor in manual arts in the high school at Brockton, Massachusetts, is the new head of the manual arts department of the Vermont State Normal School at Castleton. It is planned that the work in this department will show a close correlation between art and manual training. A practical arts course will be given.

Miss Marion B. Adams is teacher of domestic science at Parsonsfield Seminary, in Maine, this year.

The high school of Grand Rapids, Minnesota, has departments of domestic science, manual training, and agriculture.

Miss Mary W. Dodge succeeds Miss Hazel M. MacBeth as manual training teacher at Bristol, Conn.

Arthur B. Newhall, head of the high school manual training department at Salem, Massachusetts, resigned to accept a position in Wentworth Institute, Boston.

Arthur B. Leach, of Portland, Maine, will teach manual training at Methuen, Massachusetts, this year. Mr. Leach has had wide and varied experience in public school work and was for some time national secretary of the Federated Boys' Clubs of America.

Everett M. Stanley resigned as supervisor of manual training at Bridgeport, Connecticut, to accept a position in Waterbury. His position at Bridgeport has been filled by A. H. Barrows, of the State Trade School.

Warren S. Swett has charge of the newly-installed manual training department at Fairfield, Maine. Miss Alice Webster teaches the domestic science.

Harold P. Manly is the new director of industrial arts at Salem, Massachusetts. Mr. Manly has been a student-instructor at Columbia University.

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FIELD NOTES

(Continued from p. XIX)

Brockton, Massachusetts, has grade centers for manual training this year in addition to the course in the high school. Joseph S. Kadesch will teach manual training in the grade centers.

East Washington, Penna., has manual training this year.

Central Falls, Rhode Island, has introduced manual training into the public schools this year.

Ipswich, Massachusetts, will have manual training this year.

Calais, Maine, has a department of manual training, this year, under the direction of James Higgins.

The New London, Connecticut, manual training school opens this fall with the largest enrolment in its history.

Daniel W. Darney supervises drawing and manual training at Stonington, Connecticut, this year. Mr. Darney has just returned from a trip abroad during which he visited schools in the principal countries of Europe.

Robert Aschenbach is the new instructor in high school manual training in Quincy, Mass. Miss Mary M. Whitcomb is a new member of the force of domestic art teachers.

West Roxbury, Massachusetts, has a department of manual training as a new feature of the high school this fall. Charles H. V. Morse is in charge of the new department.

Fernand Rousseau teaches manual training at Wakefield, Mass., this year. Mr. Rousseau is a graduate of the Rindge Manual Training School of Cambridge.

Winchester, Kentucky, has new departments of manual training and domestic science this year.

Manual training and domestic science were introduced into the school of Dover, New Hampshire, this fall. Miss Isabel Mowry has the domestic science work, and Miss Christine Rowell is manual training instructor.

The Lansingburg High School, of North Troy, New York, has new departments of manual training and domestic science. Leland F. Smith has charge of the manual training. The domestic science instructor is Miss Clare M. Baxter.

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FIELD NOTES

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State-aided, consolidated rural schools, in which are taught manual training, domestic science, and agriculture, are the great need of Iowa's state school system, according to the belief of Superintendent of Public Instruction, A. M. Deyoe.

The Riverside, Illinois, board of education voted to conduct the schools according to a new system, which devotes half of the school day to academic work and half of the day to manual activities. The system will be modeled closely after that in use at Gary, Indiana.

Mrs. Ella Flagg Young, in her annual report to the Chicago board of education advocated the installation of kindergartens, manual training shops, and cooking laboratories in every school in the city.

Springfield, Missouri, has established three grade centers for manual training under the general supervision of E. Z. Slater, instructor in high school manual training. Miss Jessie Clark, Sumner Gurley, and Roice Tiffany have charge of the grade centers.

A parish manual training school is soon to be established in Cincinnati by the Church of the Assumption. This, together with the fact that in so many places parochial pupils apply for admission into public manual training classes, indicates clearly the value placed on manual training by the Catholic Church.

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Architectural Drawing, High School, Fireplace and Chimney Construction, H. L. Jones, *School Arts Magazine,* Dec., p. 251. *

Art in Typography, F. J. Trezise, *Inland Printer,* Nov., p. 219.

Buildings In and About the Home Grounds, Walls and Piers, Phil M. Riley, *Garden Magazine,* January, p. 247. *

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Christmas Toys a Boy Can Make, A. N. Hall, *Woman's Home Companion,* Dec., p. 30. *

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Expensive Free Education, Forrest Crissey, *Saturday Evening Post,* December 14, p. 14. *

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Harmony in Embroideries, Louise Shrimpton, *Country Life in America,* January, p. 59. *

Home-Made Book-Plates, William S. Rice, *School Arts Magazine,* Dec., p. 219. *

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Marvels of Modern Tool Making: Saws, B. L. Johnson, *American Carpenter and Builder,* Dec., p. 36. *

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The Old and New Schools of Japanese Painting, *International Studio,* Jan., p. 231. *

Our House Interiors, Elsie De Wolfe, *Good Housekeeping,* January, p. 63. *

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Recent English Pen Drawing, N. Hungerford, *Arts and Decoration,* Nov., p. 20. *

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Tapestries from the Architectural Point of View, George Leland Hunter, *Architectural Record,* January, p. 4. *

Technical School Craftsmanship, J. H. Rudd, *Furniture Mfr. and Artisan,* Nov., p. 538. *

Toyland and Some of its Secrets, Mary H. Hogan, *School Arts Magazine,* Dec., p. 213. *

A Viennese Exhibition of Arts and Crafts, *International Studio,* Jan., p. 217. *

A Wall Case and A Laundry Box, Ira S. Griffith, *American Carpenter and Builder,* Dec., p. 68. *

Welding by Machinery, James Steelman, *Cassier's,* November, p. 426. *

Work-Table, Window-Seat, and Chair, in White Enamel, John D. Adams, *Woman's Home Companion,* Jan., p. 34. *

* Illustrated.

FIELD NOTES

(*Continued from p. XXI.*)

The Committee to whom was assigned the decision upon the merits of the papers contesting for the economic prizes offered by Messrs. Hart Schaffner & Marx, of Chicago, for 1912, has unanimously agreed to award the first prize of $1000 to Albert H. Leake, inspector of Technical Education for Ontario, Canada, for a paper entitled "Industrial Education, its Problems, Methods, and Dangers."

Cornish, Maine, has introduced manual training into the school curriculum.

In Leavenworth, Kansas, a wing has been added to the high school for the use of the manual training department.

A travelling drawing exhibit has been prepared for the United States Bureau of Education by Henry Turner Bailey and Royal B. Farnum. The exhibit contains examples of the best drawing and art work in the elementary, high, and normal schools of the United States, also the work of one or two art schools. The exhibit is to be sent to any city desiring it upon payment of the cost of transportation from the city last using it. The transportation charges will be small.

The exhibit is not a large one but was selected with unusual care, so as to show work that will be most suggestive to teachers, children and school officers.

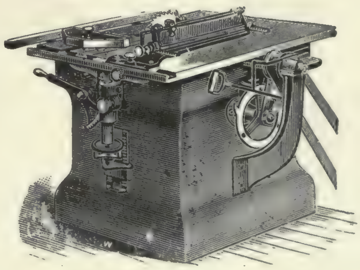
Those desiring the exhibit should notify Dr. Claxton, the commissioner of education, at once.

Visalia, California, has a new building for the use of the manual training department of the public schools.

A good beginning has been made in manual training in the Union High School at Hemet, California, this year. Four basement rooms have been fitted up for woodworking and mechanical drawing. Forty-eight students are taking the woodwork, and twenty-four the mechanical drawing.

The cost of equipment for the woodworking was about $775 and $200 for the drawing. The coming year, the board of education expects to have erected two buildings for the manual

(*Continued on p. XXXIII.*)



FIELD NOTES

(*Continued from p. XXXI.*)

training department, one 30 by 60 feet, and the other 30 by 55 feet. These buildings will be two stories in height and will be connected with the main building of the high school. These buildings will be equipped with everything necessary for a full four-year course in manual training. The principal of the school reports great interest among the students, many of whom remain in the building each day until five o'clock in order to spend more time on their woodwork. G. H. Center, of Colorado College, is in charge of the manual training.

An industrial teacher is needed at once for a school in Chengtu, China. The subjects to be taught are the manufacture of sugar, paper, leather, sulphuric acid, alkalies, and general science. Those interested may write Wilbert B. Smith, 125 East 27th Street, New York City.

Manual training is progressing in British Columbia under the active administration of inspector Harry Dunnell. The latest reports come from the East Kootenay district, where Cranford, the capital, has a new and up-to-date manual training building. This building is a one-story brick structure, 33 by 51 feet, and will contain equipment for twenty-four woodworking benches. Its cost is about $7000. Woodwork is taught in Cranford from grade two to form two in the high school, and raffia work, clay modeling, and paper work are taught in the primary classes. Albert H. Webb, formerly supervisor in Edmonton, Alberta, is directing the work in Cranford.

Nelson, another city in the Kootenays, has a woodworking department under the direction of Reginald Goldfinch.

A manual training department has been arranged in the new Thomas H. Dudley School on the East Side in Camden, New Jersey. This will make it possible for all the pupils in this part of Camden to have instruction in this subject.

The Athens, Pennsylvania, high school will soon have a manual training course.

Manual training classes in Sioux City, Iowa, will be open to parochial pupils provided there are enough of the latter, desiring the course, to warrant engaging another instructor.

BOOK NOTES

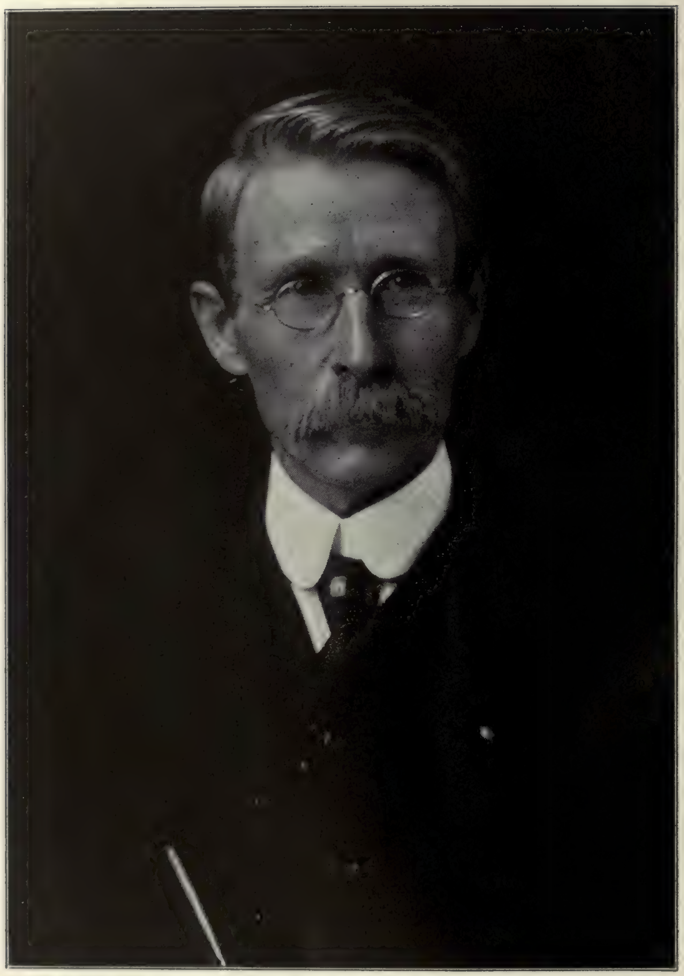
Several months ago The Manual Arts Press announced a forth-coming book entitled *Manual Training Toys* by Harris W. Moore, teacher of manual training at Watertown, Mass. This book has suffered several delays but it is now expected to be ready for distribution by the 4th of December—just in time to be a holiday gift to many a boy, and it is a good book for that purpose. Everyone who has read the manuscript and seen the illustrations has been enthusiastic over it. The aim of the book is to help boys in making interesting wooden toys—the kind that go or shoot or spin or fly or rattle or bang—that can be used for fun by a real live boy of grammar school age. Enough details are given to enable a boy to work out each toy, but not without some good thinking on his part. The book is remarkable for its pedagogic discrimination in the presentation of details. It stands for good technique and good design, but it encourages a boy to use materials he can find at home or purchase for a few cents. It tells him in detail numerous "tricks of the trade" that have been picked up by a craftsman, who has retained his boyhood interest in making "playthings" and has spent years helping and teaching boys. It is a unique book, and if we are not greatly mistaken, it will be as warmly welcomed by manual training teachers as by the boys themselves. Indeed the problems in the book have already been used in either seventh or eighth grade woodworking classes with such marked success that one might easily be led to prophesy that this book will strike a new note in American manual training for grammar grade classes. We do not believe that toys will at once take the place of furniture problems for all, or even most American boys, but it is quite possible that they may make a stronger appeal to many boys, may stimulate inventiveness, and at least earn recognition along with the "things useful in the home or at school."

The *Drafting Room Series* by Frederick H. Evans, which also has been announced by The Manual Arts Press, is nearly completed. It will probably be ready for distribution about the first of January. This will be as unique and interesting in its field as Mr. Moore's book is in the field of woodworking. One might think that it is now impossible to present new subject-matter in mechanical drafting, but Mr. Evans has done it and in a unique way. But its uniqueness is not its chief virtue. That lies in the fact that its subject-matter is the result of a new analysis of practical drafting from a practical man's standpoint. Of course it teaches old principles, but with a practical man's emphasis, and at the same time, with the pedagogic insight of a student of education and a successful teacher of apprentices and journeymen as well as high school and college students.

About a year ago there appeared a book on *Paper and Cardboard Construction* by George F. Buxton and Fred L. Curren that immediately took the lead among books on this subject because it reduced the subject to its essential elements, presented these in practical form for the use of teachers, gave hints concerning organization of the work and methods of teaching it, and eliminated the great mass of trash that has been gathering around this phase of manual arts work in the schools. The first edition of this book published by The Menomonie Press has been exhausted and the book taken over by The Manual Arts Press. The authors have thoroly revised the book, both in text and in drawings, and a new edition is in process which will be enriched by a large number of photographs. The drawings will be reproduced to fit a larger page and all the type of the text reset. In fact, it will be a new book, and a very attractive one.

The Commissioner of Education of the United States is trying to make the library of the Bureau of Education a complete reference library on all phases of education. To assist in this he wishes to obtain, as soon as issued, two copies of all reports, catalogs, circulars of information, and all similar publications of State, county, and city departments of education, and of education associations, boards and societies. All persons responsible for the distribution of any such matter are requested to send two copies to the library of the Bureau. If the postage would be considerable, the library should be notified by card, when free mailing labels will be sent.

Address all communications to The Librarian, Bureau of Education, Washington, D. C.



G. B. Morrison

GILBERT BURNET MORRISON.
[SEE EDITORIAL]

VOLUME XIV NUMBER 4

MANUAL TRAINING MAGAZINE

APRIL, 1913

THE INDUSTRIAL ARTS FOR BOYS OF THE SEVENTH AND EIGHTH SCHOOL YEARS.

ERNEST B. KENT.

THE seventh and eighth school years are coming to be regarded as belonging to the secondary rather than the elementary period. If they could be transferred to the various higher schools many advantages would accrue, no doubt. However, they are not a part of these schools, and are not likely to be, in public school systems generally, for a good while to come.

Our present problem, therefore, is to take these two years where they are and make the most of them. We must seek profitable relationship with the work of the higher schools in spite of their physical distance, and in spite of the fact that they are physically within the elementary school we must be ready to depart from its regular program as much as may be necessary to meet the special needs of this intermediate period.

What, in the first place, should be the main difference between the work in industrial arts for these two years and that of the years preceding? Not merely, I should say, in that new industries are to be treated, tho this may be done; nor yet in the mere filling in of detail regarding industries already studied, tho this will surely be done. All this is the sort of development that has occurred from year to year during the elementary period proper.

I believe that this is about the right point in the school life for a much more radical and fundamental change of emphasis; that, while in the previous grades *industry* has been the subject matter of the course, now, for these two years at least, the *boy himself* should become the real subject matter. Before the sixth year, that is, we ask, What is he

learning about industry? After the sixth year we should ask, What is he learning about himself, and what is the teacher learning about him? Which boys in a class have latent aptitudes for this or that or the other type of industrial work? Which ones have an all around sort of adaptability to any industry? Which boys are showing themselves generally unmechanical? And finally, in the case of each boy, how do his achievements and interests in these lines compare with his effectiveness in the non-mechanical types of school work?

My thesis is that the main duty of the school shop during these two years is to serve as a laboratory for vocational guidance with respect to the industrial occupations. I think we may say that the shop not only should be, but is and always has been, such a laboratory. Even with the narrowest course in woodworking aiming at something very different, it was yet for the average boy the best if not the only means whereby he could judge intelligently of his fitness or unfitness for mechanical work. It is a fair question whether this incidental result, this mere by-product of manual training, has not been more valuable than the results that were being aimed at.

However that may be, my own belief is that for three-fourths or seven-eighths of the boys in the seventh and eighth school years this vocational guidance at least *may be* the most valuable single feature of the shop work.

CLASSIFICATION OF PUPILS.

Some classification of these pupils with reference to their further education will make this clearer. We may form five groups as follows:

1. Those who are so far retarded that they go to work before completing the elementary course.
2. Those who go to work at graduation.
3. Those who enter a short-course vocational school.
4. Those who complete a high school course.
5. Those who attend both high school and college.

Of these, only the last group—to take them in reverse order—are in a position to ignore such guidance during the seventh and eighth years. Those who go to college have the high school period in which to study their special aptitudes. For them quite possibly the aim of the industrial arts work might remain here, as in the earlier grades, a purely cultural study of the important phases of human industry.

This group, however, contains no more than five or ten per cent of the total; and practically all of the others are near enough to their choice of occupation to make it a matter of serious moment to them.

Those who, on leaving the grammar school, undertake a shorter vocational course, whether commercial or industrial, are the ones who most of all need this assistance. These courses are more highly specialized, and therefore have the less of general educational value. The boy who takes the wrong course must either throw away this year or two of work and begin over again, or else remain thru life a misfit.

As for the boy who goes directly to work on leaving the grammar school, he of course has to take whatever kind of work he can find. He will be a casual worker for two years or so and then select his occupation, if indeed he ever ceases to be a casual worker. These years may teach him some things, but there is not one chance in ten that they will give him any direct contact with a skilled industry. On account of the low initial wage in skilled industry he is altogether likely to follow some other form of work, regardless of any special aptitudes, unless parent, friend, or school has interested him in some form of mechanical work.

In accepting vocational guidance as the leading aim instead of the by-product of the work in these grades we must not overlook the importance of other values still to be realized merely because they in turn are to be classed as by-products. Any industry treated may still be handled in a broad way, taking careful note both of its relations to natural science and of its place in the social economy, thus making of it incidentally a truly cultural study.

This special aim, while it may also influence the method of treatment, bears especially upon the selection of the industries to be studied. It demands, of course, that they be chosen with careful thought for the needs of the locality in question. Thus it would oppose pottery, for example, in the schools of Jersey City, tho making it perhaps a major subject in Trenton. It would in most communities demand attention to a greater variety of industries than has been customary. This means, of course, less time for the established ones—at least until the time allowance is increased as it sometime will be. Some who are accustomed to assign the whole two years to a carefully graded course of woodwork may look upon such a course as a smattering, tinkering sort of pseudo-study with nothing done thoroly enough to be "worth while" as they would express it. The whole question is, What are we going to aim

at? What *is* worth while; or rather, What is most worth while? Is it the reaching of a certain technical standard in woodwork? This is pure assumption. We have been doing this for years and the high schools have continually commented that they had to begin all over again with our pupils anyhow. I believe that the self knowledge obtained thru experiment with varied industries may be made vastly more worth while than any degree of technique that we may be able to obtain thru the intensive type of course.

Every shop teacher knows that four times out of five the boys who lead a class during the first month in the shop hold that lead consistently thruout the entire course. He does not need two years nor one year to pick out pupils with a talent for woodworking, and the pupil does not need two years or one year to find out whether he likes the work. If boys can leave the shop with at least some idea, based on actual experience of their relative suitability for a half dozen different industries, it will be for the great majority of them more worth while than any technical skill which might come thru concentrating upon a single type.

CONDITIONS IN JERSEY CITY.

It may make the subject more concrete to describe very briefly some of our own experiments in this direction. They derive their main interest probably from the fact of being carried on under strictly average public school conditions—one and one-half hours per week, no shopwork below seventh grade, and classes of twenty to twenty-four pupils.

The census reports give Jersey City some fifteen thousand men in the skilled industries about evenly divided between the building and the metal manufacturing industries. Some four-fifths of these are employed in the following nine trades, given with the approximate number engaged in each:

1.	Carpenters and woodworkers	3,000
2.	Machinists	2,000
3.	Stationary engineers	1,500
4.	Foundrymen	1,000
5.	Other metalworkers	1,000
6.	Masons	1,000
7.	Plumbers	1,000
8.	Electricians	700
9.	Steam and gas fitters	500

FIG. 1. HOUSE FRAME. WORK OF ONE 7TH GRADE, 20 PUPILS.

Our aim has been to give in our two year shop course some form of contact with all nine of these, with special reference to vocational choice, and we have made some attempt with eight out of the nine—plumbing being the one exception.

The woodworking industries, of course, present the simplest problem. The usual types of work leading up to furniture construction are satis-

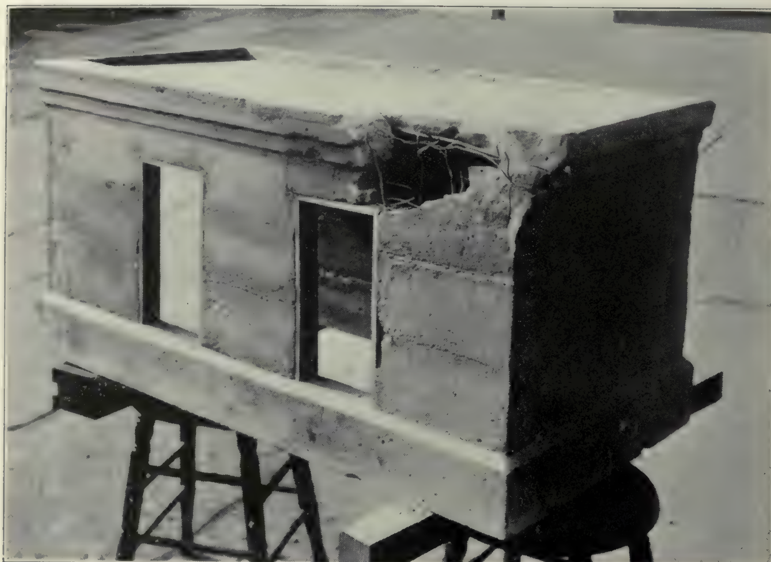


FIG. 2. MODEL GARAGE. CORNER CUT AWAY TO SHOW REINFORCING.

factory, so far as the one branch of cabinet-making is concerned, and give some general acquaintance with woodworking tools. But rougher forms of woodwork also deserve notice, since certain boys will succeed in the house building who would never do so in cabinet-making. Rough work implies large work, and the practical difficulties of opening up this field thru the medium of the school shop are too obvious to dwell upon. We have, however, in the second half year built model house frames which we think give some slight feeling of out door construction, in spite of the small scale—one-eighth size in length of timbers, and one-fourth in cross-section. See Fig. 1. The work also gives a conception of the various members, their functions and proportions, which is possibly more cultural than vocational in bearing.

We have found no satisfactory treatment for bricklaying as such, but work in reinforced concrete construction has been introduced most profitably. It seems to include some of the same factors, and to give some feeling and appreciation of building in brick and stone. An elementary study of strength of materials is necessary in order to understand the proper location of the reinforcement. Various samples of

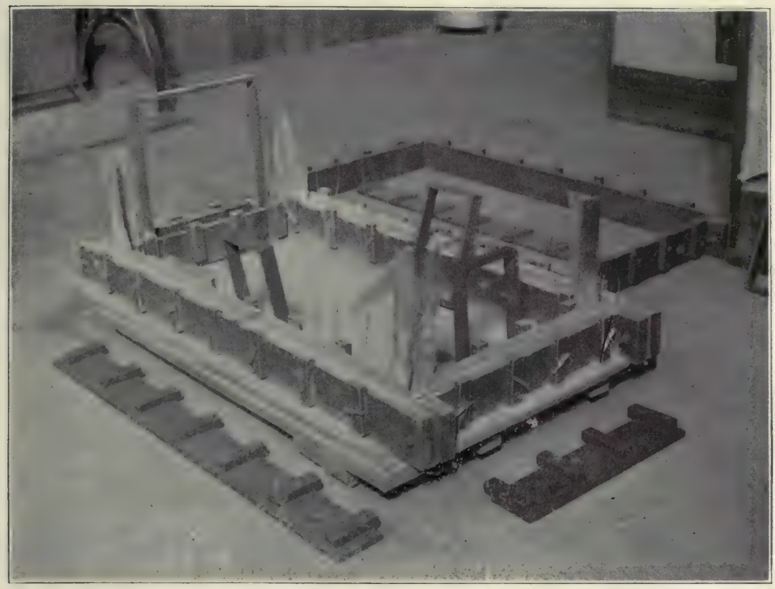


FIG. 3. MODEL GARAGE. FORMS IN PLACE FOR FIRST COURSE.

concrete with and without reinforcement are made and tested to the breaking point. A model house or garage about two feet high is then built as a class project, Fig. 2. The usual methods of reinforcing walls and roof are followed. The walls are poured in courses of about three inches each, and the molds are moved up successively, Fig. 3. Thus the process is typical thruout, and, except in the one matter of weight involved, gives correct impressions not only of the underlying science, but of the manipulation side as well.

The electrician stands midway between the building and the machine trades, sometimes belonging to one group and sometimes to the other. Various projects for giving pupils some feeling of electrical work are

too well known to require more than mention at this time—the telegraph sounder and key are the most common. We have made much use of an electric motor made from four wire nails and a bit of glass tubing. It can be built in four lessons, buzzes around most engagingly on current from one or two cells, and gets out of order readily enough to give good experience in hunting what the electricians term "trouble". It gives more electrical experience for the time required than any other project with which I am familiar.

In connection with such a problem there may well be the suggesting of optional work which will test still further the pupils' interest in the subject and their ability to think in electrical terms. For example, a series of problems in electric bell circuits may be assigned. The truly electrically minded boy usually shows much skill and interest in working out the diagrams at home.

METALWORKING TRADES.

We come now to the metalworking trades proper. Here machinists are seen to be most numerous, while nearly all of the others are steam engineers, steam fitters, and foundrymen. The first three of these trades have enough in common so that they may be grouped together for treatment elementary enough to fit the eighth grade. That is, most successful machinists would have made at least fairly good stationary engineers and most engineers fairly good machinists. Steam fitters also work with the same hand tools and upon the same materials as the others, tho they do not, of course, require the same amount of what we have called machine-sense. We have felt therefore that attention to the metalworking industries in school might be limited to three main problems of machine-shop, electrical, and foundry work, within a time allowance of rather less than a year.

Treatment of the foundry is a simple matter. We have tried various plans. One of them is the building by pupils of small flasks, measuring four by six inches inside. The teacher gives a careful demonstration of casting lead, followed by an excursion to a foundry. The pupils then take their flasks home and experiment for themselves, bringing in their lead castings for criticism. With proper encouragement fifty to eighty per cent of the pupils will experiment in this way, getting some notion both of the principles involved and of the "feel" of working in the sand. Another plan has been to arrange a small molding bench in the shop

and assign two or three boys to it each week until all had made trial of the work. Not infrequently it happens that a boy will show special delicacy in handling the sand who has been deaf alike to all commands and entreaties relating to that ancient and honorable problem, the getting of a "working edge".

It is the machine-shop problem however, which is the most difficult, and for us, at least, the most important. One's first thought of the machine-shop equipment is of something so complex, expensive, and utterly different from that of the school shop that one is tempted to give up the idea of a school course that will pick out the machinist-to-be and separate him at all from the carpenter-to-be. But let us see just what is involved in this process—what special forms of ability or interest separate the machinist-group from other mechanical groups. First, there is this "machine-sense"—a ready understanding of any given machine—quick grasping of the relations and functions of its various parts. This is a purely intellectual matter. It has nothing to do with any technical or manual ability whatever; it is an inborn talent as distinct as musical or artistic talent and susceptible to training in the same degree. It may safely be called the fundamental asset of machinist or steam engineer.

It is the discovery rather than the development of this talent that we are concerned with. The machine-shop is the ideal place for this because its machines are so varied and because their use requires judgment rather than technique. Even projects in wood that call for the adjustment of moving parts—from toy wagon and jumping-jack upward —probably render distinct service here. The operations requiring manual skill such as laying out work, filing, center punching, etc., are not to be ignored, but hand skill in these operations is not fundamentally different from hand skill in woodworking. That is, one who can learn to plane and chisel well can probably also learn to file well, and vice versa; so far, that is, as motor and visual control is concerned, but there is a problem of taste and preference here that must not be ignored. Many a man who likes to plane hates to file, and many a man who likes to file hates to plane.

The school problem then comes down to this:—(1) Can we in the eighth grade give a boy enough of filing, drilling, thread-cutting, etc., so that he will reach some basis of preference, as between woodworking and metalworking? (2) Can we give him such experience either in building machines or in the studying, operating, taking apart and putting together of machines so that he can form a better judgment of his interest in machines and his talent for them?

It seems to me that we may do both of these things in a considerable degree if we are willing to take a half year or so for the purpose. Our own plan is to take the first half of the eighth year and to devote it to the building of some small machine complex enough to require rather careful study and adjustment in order to make it operate.

For the past year we have been building steam-engines, following the very detailed plan which appeared recently in the MANUAL TRAINING MAGAZINE.[1] For a shop with little or no special equipment it seems to me to serve this special purpose far better than any other project that I know of. It arouses great interest, its valve mechanism is sufficiently complicated to call for serious study, it requires a large variety of tool operations and a good deal of careful adjustment in assembling, is not too difficult for the average eighth grade boy when properly presented and organized, yet any boy with a real talent for machinery begins promptly to show it in no uncertain way. We have found it somewhat too long for a half year's work, and last term we built only one engine for every two boys by means of a plan of organization which may be worth outlining briefly: The teacher listed the eighteen boys in order of shop ability and divided it in the middle. The nine strongest pupils were appointed foremen. Each foreman chose an assistant from the poorer half of the class. The ninth foreman, of course, had first choice, and the first foreman, the strongest man in the class, got the last choice. Thus the pupils were, on the whole, congenially paired and the nine groups averaged an approximately equal ability. They worked together in good spirit with the understanding that when the engine was finished the highest bidder would buy the engine of the other—the bids, however, being weighted by the teacher in those cases where one member of a pair had done what was clearly more than his own half of the work.[2]

This machine-shop experience, however, may be made much more effective yet, if some special equipment is to be had. We have tried, not always with success, to furnish for each shop one small footpower engine-lathe. This is, of course, the fundamental machine-shop tool and greatly increases the possibilities of this type of work. Its own

[1] A Soft-Metal Steam-Engine, by W. P. Kent, April, 1912, p. 304.

[2] We have tried also a small oscillating steam-engine. This requires much less time—each boy can readily complete one in a half year. But the working out of the valve mechanism seems to me much more valuable considered as a study of machinery.

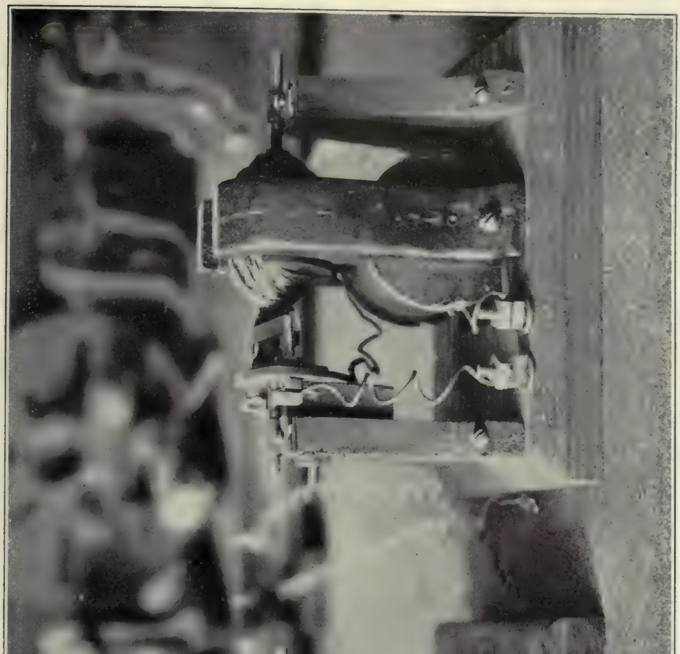


FIG. 4. ELECTRICAL CONSTRUCTION.

FIG. 5. BOAT BUILDING AND ELECTRICAL CONSTRUCTION.

mechanism is a valuable study. It permits many demonstrations by the teacher and it gives to each boy sometime in his course the *feeling* of handling back gears and slide rest. The usual project here is an electric motor built from the rough castings, each boy turning his own armature and boring his field. See Fig. 4. This happily combines the electrical study with the machine-shop study. I think it is a fair claim that a class which has completed this project has as clear a conception of the machine-shop as most manual training classes have of a woodworking shop, tho not, of course, as much of technical facility.

CLASS EXCURSIONS.

One factor not emphasized thus far is of very great importance in connection with every one of these or similar studies: The class excursion, *directed* observation of the same trade or industry on a life-sized scale. Its difficulties are much less than seem to be sometimes assumed. If pupils are kept close enough together there is no danger of their being injured in any way; and there is practically never any objection from shop foremen after they have been fully brought to realize that the trip is a study and not a lark. In fact they usually seem to appreciate the attention and cooperate actively.

Mr. Prosser has outlined in some detail a reorganization of the work of these school years with special reference to service as vocational guidance.[3] Its proposals look to a much greater flexibility both in kind and amount of manual work thru: (1) Special attention to retarded pupils so that pupils may enter the shop at the age of twelve without regard to academic advancement; (2) larger time allowance with some provision for elective shopwork; (3) differentiation in equipment of neighboring shops with provision for exchange of pupils in special instances.

Such a readjustment would doubtless quadruple the effectiveness of shopwork for vocational guidance. It is a change that seems greatly to be desired and will doubtless come in time. All of us should work for it, but, as I have tried to show, none of us should wait for it.

[3] Practical Arts and Vocational Guidance, by C. A. Prosser; February, 1913, p. 209.

REPORT OF A COMMITTEE ON MECHANICAL DRAWING FOR HIGH SCHOOLS.

Fred D. Crawshaw and J. D. Phillips.

THE authors of the following outline on mechanical drawing wish to make clear their reasons for presenting what might be regarded as merely *another outline.*

Teachers of mechanical drawing now have so many available outlines and texts that any additional scheme must be *new* in substance or method of presentation, rather than new merely because of a change of form. In order to justify any serious consideration, the following brief discussion setting forth the salient features of the outline is given therefore, to point out the element of newness and to insure a careful reading.

IMPORTANT FEATURES.

I. Specific and individual emphasis upon the elements of drawing.

II. The peculiar method of presenting problems in each of the divisions of the outline.

III. The elimination of all abstract problems, as such, except as supplementary work.

IV. A course of working drawings in which all necessary theory and practice for technique are involved in a progressive series of concrete applied problems.

V. The preparation of students, so far as possible, at the end of each year for the commercial drafting room.

VI. The instalment plan of preparing students for a high standard of technique in the freehand element of mechanical drawing, viz., making letters, figures, arrowheads, etc.

VII. Home work paralleling and supplementing class work.

VIII. Perspective drawing as an element in mechanical drawing.

DISCUSSION.

A brief elaboration upon each of the enumerated points is given herewith.

I. The outline is the result of a natural evolution in which the authors in their work of inspecting high school drawing and directing freshman college drawing, have, with many others, come to the conclusion that to get good results, either in the theory or practice of

drawing, concentration upon elements is necessary. To this end, the subject of drawing has been carefully analyzed by them and each resulting element is presented singly and emphatically that it may be understood, and that in it, there may be a fair degree of technique established before it is used in combination with other elements in a complete drawing. The complete drawing as herein considered, consists of the orthographic and perspective sketches, the pencil mechanical drawings, the tracings, and the blue prints.

II. The assumption is made that properly to convey an idea the graphical and constructive method of presentation should be used to the fullest extent. The outline provides for carefully outlined demonstrations by the instructor. Each one of these is given by means of all the elements of a completed drawing. All the data is therefore given. This, however, is gradually eliminated, problem by problem, until in the last problems of each division, the least possible amount of data is furnished. It should be noticed, also, that in each division of work, the first problem for the student is essentially a copy. By this means, and by this means only, it is believed, can the correct standard of workmanship be fixed. The ideal for each individual is set at the beginning of his work. He sees with his own eyes the result he is expected to get.

III. The abundance of abstract problem work, such as sheets of lines for instrumental practice, numerous problems in geometrical construction, the theory of projection and revolution, etc., is an incumbrance to any high school course in drawing. All the essentials of such work may be applied in working drawings. Upon this theory the outline is developed. However, in the supplementary work and as an immediate preparation and application of a principle or bit of fundamental data, practice may be had upon a separate sheet. In a similar way do we prepare ourselves for some particular kind of work in any field, but such preparation is not an integral part of the work itself.

IV. The outline as given provides only for concrete applied problems in a course of working drawings. It will be noticed however, that the selection of these problems is made with a view towards progression in both theory and execution. The ordinary conventions of drawing are introduced gradually and systematically; for example, an order of progression made in each division is, (1) problems involving straight horizontal and vertical lines, (2) oblique lines, (3) circles, (4) tangents.

V. Emphasis is placed upon commercial drafting methods both in the case of drawings made by students and by a summarization of all preceding work at the close of the school year. At the end of the first year, working drawings are made which account for all the divisions in which some one element has been presented. At the end of the second year, detailed and assembly drawings furnish the climax for the year and for the two years' course as well. It is believed that no better developmental plan has been devised as a preparation for commercial drafting room work.

VI. No particular part of the mechanical drawing is usually more defective than that which we speak of as freehand. Letters, figures, and arrowheads often spoil the otherwise good appearance of a drawing. The principle of concentration above referred to, is applied in the development of lettering in the outline. Lettering is started in the beginning of the first year but not by making a formal sheet of letters or by lettering the regular sheets in the course. The alphabet is divided into groups representing the kind of lines used in making the letters in each group. Practice upon these groups is given during a part of each drawing period and in the order of difficulty of execution. When sufficient continuous, but short period practice has been secured, the student applies this practice upon drawings already made. Upon all future drawings, letters and figures will be made as soon as the drawing is completed.

VII. Mechanical drawing in high schools is usually put upon the same time basis as any other laboratory subject. In most cases these subjects, such as physics, chemistry, etc., require a certain amount of home time for study and preparation. Not so with drawing. The home work is introduced in this outline with the thought that it is legitimate to demand it, and that by it much preparation for regular classwork may be made. Much of the practice work can thus be provided for. Then too, by making use of home subjects for drawing projects, the home and the school can be co-partners in the drawing which the pupil is doing. The sketches for these home problems must be made at home. Such work should be given due consideration as an integral part of the course of study and should receive due credit.

VIII. Perspective drawing is valuable for many reasons. In the first place, it emphasizes the freehand element which, as already noted, has been so persistently neglected in the teaching of mechanical drawing. This neglect seems all the more strange when we realize that every individual has some natural endowment in the matter of expres-

sion by graphical means. Second, as has been pointed out by a number of writers on the subject, perspective drawing is valuable as a means of interpreting mechanical drawing. It is for this reason primarily that the subject of perspective sketching is introduced into this outline.

In the outline the freehand lettering is suggested opposite the first line or division of each year's outline, as set forth in the right-hand column. It should be understood that this lettering runs thru each of the two years.

The work has been divided into three parts and designated (a) demonstration work, (b) class work, (c) home work, in order to make the arrangement clear, and in order to indicate when and how each of these divisions of the work should be used. It is believed that a great deal depends upon the demonstration, and the attempt is made, therefore, to state in some detail what should be presented in each demonstration and what the classroom and home work should be.

THE REPORT.

The committee recognizes two general types of courses in drawing; first, a course in which lettering, instrumental exercises, and the theory of projection precede the working drawings; second, a course based on a progressive series of working drawings extending thruout the course, with auxiliary work in lettering, instrumental exercises, orthographic, isometric, and cabinet projection introduced as needed. In making the following outline the latter type of course was chosen, altho it is recognized that good results may be obtained by either method.

It should be noted that each year's work is complete in itself and ends with a division which prepares the pupil as far as possible for practical drafting. The lettering which should accompany the work done in any one division of the course is shown opposite that division in the following chronological outline:

First Year.

LETTERING.	PRELIMINARY WORK.
D. Upright letters and numerals.	1. Pencil work. . A. Sketching.
	Pencil work. . B. Penciling.
	2. Ink work . . . C. Inking.
	Ink work . . . E. Freehand perspective
	WORKING DRAWINGS.
	Ink work . . . F. Dimensions and Conventions.

Second Year.

D. Inclined letters and numerals.	1. Pencil work . . G. Oblique views.	
	2. Ink work . . . . H. Sections and developments.	
	Ink work . . . . I. Intersections and developments.	
	Ink work . . . . J. Detail and assembly drawing.	
	Ink work . . . . K. Isometric and cabinet projection.	

While many problems suggested are of a practical nature, the necessity for a thoro drill in the fundamental principles and operations should not be overlooked. Pupils should be brought to understand the purpose of each drawing. As far as practicable drawings made in the drawing room should be used by pupils in the shops. Where this is not possible instructors should familiarize pupils with the shop processes involved in making the objects represented.

A reasonable amount of home work including reading, practice in lettering, and the solution of supplementary problems should be assigned.

The pupil's knowledge of work covered in demonstrations and plate work should be tested frequently in short recitation periods. Demonstrations, as well as recitations, should be short, approximately twenty minutes in length.

Work in design should be emphasized thruout the course. A concise treatment of a few fundamental principles of design is recommended.

Time: Two 90-minute periods per week for two school years of ten months each.

PRELIMINARY WORK.

A. SKETCHING. Use $\frac{1}{4}''$ cross-section paper with semi-rough surface. Emphasize single strokes. All sketches should be entirely freehand. The proportions of an object should be estimated by eye. No dimensions should be taken. Hang sample sketches in the classroom. Illustrate methods and give examples of technique at pupils' desks. Omit dimensions, dimension lines, and extension lines in the following preliminary sketching work.

1. Rectangular objects.

a. ***Demonstration.*** Present problem with object, and freehand perspective and orthographic sketches. Show arrangement of views without using the planes of projection. Emphasize the method of proportioning the sketch to an enlarged scale. Object suggested, bench-hook.

b. ***Classroom work.*** Draw a freehand orthographic sketch of an object similar to the one used in the above demonstration. Object, freehand perspective and orthographic sketches furnished. Object suggested, small butt-joint box or tri-square.

c. ***Home Work.*** Furnish each pupil with perspective sketches of a number of simple rectangular objects usually found in the home. Assign one object to each pupil, as a problem for an orthographic sketch.

2. Objects having inclined faces.

a. ***Demonstration.*** Present problem with object, and freehand perspective and orthographic sketches. Emphasize the representation of inclined faces. Object suggested, bird-house.

b. ***Classroom work.*** Draw a freehand orthographic sketch of an object similar to the one used in the above demonstration. Object and freehand perspective sketch furnished. Object suggested, mail-box.

c. ***Home work.*** Furnish each pupil with perspective sketches of a number of simple objects having inclined faces. Objects usually found in the home should be selected. Assign one object to each pupil as a problem for an orthographic sketch.

3. Objects having circular edges.

a. ***Demonstration.*** Present problem with object, and freehand perspective and orthographic sketches. Emphasize the representation of cylindrical surfaces. Object suggested, center screw face plate for speed lathe.

b. ***Classroom work.*** Draw a freehand orthographic sketch of an object similar to the one used in the above demonstration. Dimensioned freehand perspective sketch furnished. Object suggested, small three step cone pulley.

c. ***Home work.*** Furnish each pupil with perspective sketches of a number of objects having circular edges. Objects usually found in the home should be selected. Assign one object to each pupil as a problem for an orthographic sketch.

4. Objects having tangent edges.

a. ***Demonstration.*** Present problem with object, and freehand perspective and orthographic sketches. Show how a third view is found when two orthographic views are given. Object suggested, sleeve-board.

b. *Classroom work.* Draw a freehand orthographic sketch of an object similar to the one used in the above demonstration. Two orthographic views given to find a third view. Object suggested, pen tray with beveled corners and sloping sides.

c. *Home work.* Furnish each pupil with perspective sketches of a number of objects having tangent edges. Objects usually found in the home should be selected. Assign one object to each pupil as a problem for an orthographic sketch.

(*To be continued.*)

MECHANICAL TOY-KNIGHT, DESIGNED AND EXECUTED BY BOWKER, CHICAGO TEACHERS COLLEGE.

HIGH SCHOOL MANUAL TRAINING PROBLEMS FOR COUNTRY BOYS.

Ozro B. Badger.

OUR new problem in Columbus, Indiana, has been to meet the needs of the pupils from the rural districts. We have endeavored to develop a course for a class of boys who have entered high school from the country,—a course that is a means in helping educate them back to the farm, making them more resourceful, and enabling them to work more scientifically. This course also develops an appreciation for good technic and a desire for the esthetic around their homes. To this end we have been working, and have found a few models that can be made in an ordinary manual training shop, with an equipment such as may be found in a township high school or a school where country students attend. These models appeal directly to farm life and are so arranged, and the construction in each model is such, that the tool processes come in a sequential order. The tools used are ones that are found on the farm as a part of a farmer's equipment.

Two periods a day for one year is given to this work. Three days of each week are devoted to woodwork and concrete, and two to drawing.

I. DRAWING.

The first work in drawing consists of making the first group in Bennett's "Problems in Mechanical Drawing." In working out these problems the boys become familiar with the drawing instruments and simple projections. These plates are followed by one of simple joints used in carpentry. As all country boys are familiar with barn construction, and if not, it is easy for them to study it at home, a plate showing the details of a cornice, sill, and girts is given. This problem is finished previous to the working out of the same problem in wood.

The next three plates show the floor plan, and front and side elevations of a poultry house. At the beginning of this problem each boy is given the following typewritten sheet:

POINTS TO BE CONSIDERED IN BUILDING A POULTRY HOUSE.

LOCATION.
SIZE OF HOUSE
CONTROL OF HEALTH
COST

Location.

Dry and no shade.

Size of House.

Depends on number of fowls—4 sq. ft. per fowl floor space.
Length?
10 ′ to 14′ deep.
8 ′ to 10′ high on south side.
4½′ to 7′ high on north side.

Control of Health.

Ventilation.
Drafts.
Light.
Floors—Concrete or dirt.
Roosts—2″ by 4″ with broad side up.
Dropping board.

Cost.

Material.
Kind.
Size.
Corner post 2-2x4.
Intermediate posts or studs 2x4.
Sills 2x4 or 2x6.
Plates 2x4.
Rafters 2x4.
Sheathing 1x?
Dropping boards 1x6 shiplap.
Siding 1x?
Shingles....250 per bale
850 to 900 per square.
Square 10′ x10′.

Each student is asked to write to Purdue University for "Circular Number 37," and to the Department of Agriculture for bulletins. "Poultry Raising" by Otis Crane, "Poultry Architecture" by G. B. Fiske, and "Poultry Appliances" by the same author, are books used for reference. With the literature available the points to be considered are discussed. With the information derived each student is able to design intelligently a poultry house to meet the needs of his particular farm.

The next plates given are those for the plan, front and side eleva-

tions, and cross-section of a barn. In the working out of these drawings the following outline is given:

POINTS TO BE CONSIDERED IN BUILDING A BARN.

1. CONTROL OF TEMPERATURE.
2. CONTROL OF HEALTH.
3. COMFORT.
4. CONVENIENCE.
5. CLEANLINESS.
6. COST.

Control of Temperature.
- Height of ceiling
- Floors
- Siding
- Number of animals

Control of Health.
- Drafts
- Ventilation—King's Ventilation System
- Windows
- Doors
- Holes
- Sewerage

Comfort.
- Kind of floors
- Size of stalls
- Height of mangers
- Temperature

Convenience.
- Arrangement of
  - Cribs
  - Stalls
  - Doors
  - Hay chute, etc.

Cleanliness.
- Drainage
- Litter
- Sunlight

Cost.
- Kind of material
- Type of construction
- "Framed" or "Balloon"

Size of Material "Framed"
- Posts 6″ to 8″ sq.
- Beams 6″ to 8″ sq.
- Braces 4″ to 6″ sq.
- Sills 6″ to 8″ sq.
- Girders 6″ x 8″ to 8 x 10.
- Rafters 2x4 to 2x6.
- Joists 2x8 to 2x10.
- Nailing ties 2x6 to 2x8.
- Sheathing 1x?

Size of Material "Balloon"
- Posts 2pcs. 2x6 to 3 pcs. 2x10.
- Beams 2 pcs. 2x8 to 3 pcs. 2x10.
- Braces 2 pcs. 2x6 to 2 pcs. 2x8.
- Sills?
- Girders 3 pcs. 2x8 to 4 pcs. 2x10
- Rafters 2x4 to 2x6.
- Joists 2x8 to 2x10.
- Nailing ties 2x6.
- Sheathing 1x?

Size of Stalls.
- Length 8 to 12 ft.
- Width 4′ 6″ to 6′.
- Doors 3′ to 3′ 6″ by 8′.
- Average windows 2′ 6″ sq.
- Silos 12′ to 18′ diameter.

"Helpful Hints for Him Who Builds a Dairy Barn" by W. D. James, and blueprints from the University of Wisconsin are used in determining the sizes of the different parts of the barn. However, each student is expected to plan a barn that may be built and used on his farm so that there can be no copy work. First, the floor plan is

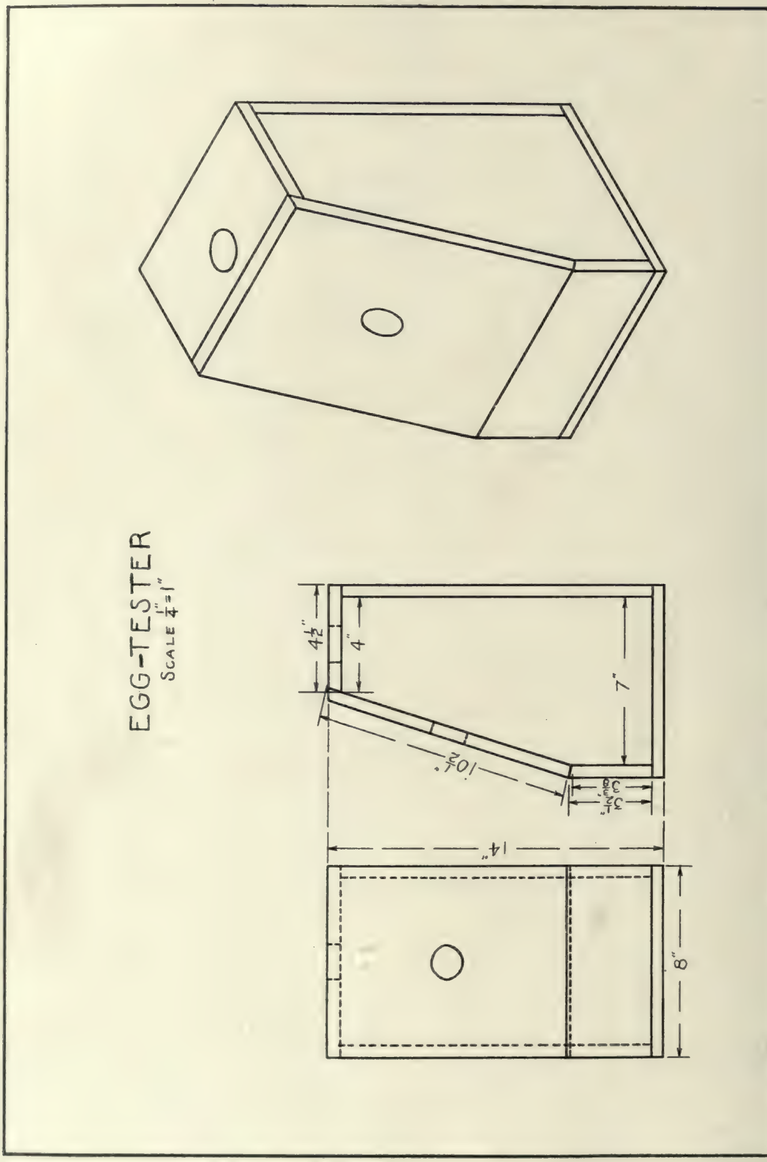


FIG. 1.

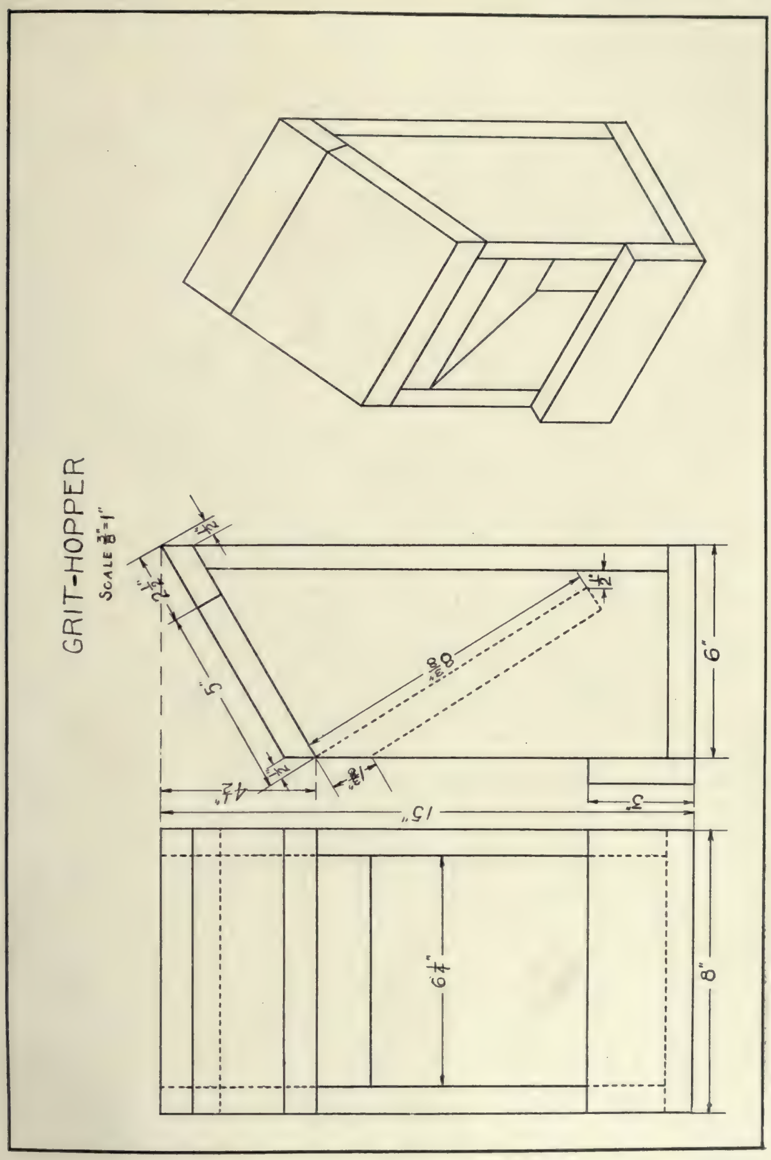


FIG. 2.

drawn; then the front elevation to determine the height; third, a cross-section to show the details of construction. This detail shows particularly the bracing and the construction of the gambrel roof. Boys are given the choice of making a barn, using the "framed" or "balloon" construction. Each step is discussed thoroly in the class.

When these plans are completed, only about six weeks of the term is left. This time is devoted to making drawings of simple parts of machinery that are used on the farm.

II. WOODWORK.

The following is an outline of the course in woodwork:

GROUP	PROCESS.	TOOLS AND MATERIAL	PROJECT
I. Laying out tools	First use of try-square & thumb gage, boring, sawing, making dowel pins.	Knife, try-square, gage, saw, dowel-plate, brace and bit; ¾x4″ tulip.	Counting-board.
II. Box construction.	Nailing, edge and block-planing.	Block-plane, jack-plane, ½″ whitewood, hinges.	Egg-tester.
III. Box construction	Surface planing, nailing, beveling.	Block-plane, jack-plane, hammer, T-bevel, hinges, ⅞″ cypress.	Grit-hopper.
IV. Modeling	Curved sawing, modeling, vertical chiseling.	Spokeshave, turning-saw, chisel, 1x4, 2x4 and 2x6 yellow pine.	Wagon-jack.
V. Joints used in barn construction	End lap, mortise-and-tenon joint, building up sills, plates, posts, and girts.	Half-size stock or 1″x4″ white pine.	Cornice, sill, and girt detail of barn.
VI. Simple carpentry	Framing, cutting seat cut in rafters for shed roof.	Framing-square, saw chisel, hammer, 3/16 size stock—any wood that does not split easily when nailing.	Poultry-house.
VII. Furniture	Making keyed and slip mortise-and-tenon-joints, glue, and crosslap joint, finishing.	Tools previously used, ⅞″ chestnut or oak.	Tabouret.
VIII. Carpentry "Balloon" and "Framed" construction	Framing, cutting rafters for gable and gambrel roof, concrete foundation.	Tools used in Group VI, ⅛ size stock, barn 1/12 size.	Barn.

Group I deals with the laying out tools, their uses and care. The project is a counting-board which may be used at home by the students in keeping count of grain, garnered or sold, or in many ways useful to the farmer.

In Group II the project is an egg tester, Fig. 1. Its use and value to the farmer are discussed in class, then its construction. It is nothing more than a box, and the processes involved in making it are edge and block-planing, and nailing. Hinges for the door may be purchased or may be made of some scrap leather brought from the boy's home. Since this is the first problem in planing, a soft wood is used, and as nailing is one of the processes, the wood should be one that does not split easily.

Surface planing is introduced in Group III in the making of a grit-hopper, Fig. 2. This problem involves a study of the shrinkage and swelling of woods. Particular attention is given to the arrangement of the boards in such relation to one another that when they swell they will not force the box apart. The other new process is that of beveling. These two projects, the grit-hopper and egg-tester, are made from the designs used by Purdue University.

The use of the turning-saw and spokeshave are introduced in making the wagon-jack, Fig. 3. The turning-saw is used in cutting the curve in the upright and the handle, while the spokeshave is used only in modeling the handle. The laying out of the handle and the curve gives an excellent problem in freehand sketching and a study of good curves. The base may be fastened on with screws, or with a mortise-and-tenon joint, if the students are capable at this point of doing it. The height of the steps is determined by each student to conform to his particular vehicle. The first step should be two inches higher than the lower axle of the vehicle, that is, the jack has a leverage of two inches. Care must be taken that the handle will stand at the proper angle. This is done by placing the handle before it is modeled under the completed upright and holes marked from the ones already bored. The jack is made from 1″x4″, 2″x4″, and 2″x6″ yellow pine. The iron plates may be made at a machine-shop at a cost of two cents each, and bolts found on some piece of old machinery and brought in by the boys may be used or purchased from a hardware store for ten cents—making the total cost of the project only twenty-five cents. The last process is that of painting. At this point emphasis is placed on the value of paint not only on wood but iron also. Statistics show that more machinery on the farm is rusted out than worn out.

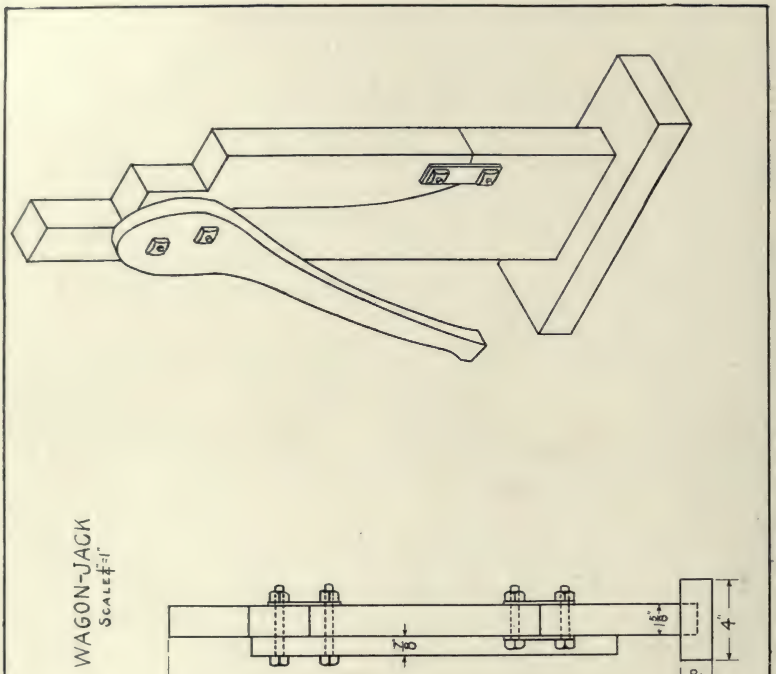


FIG. 3.

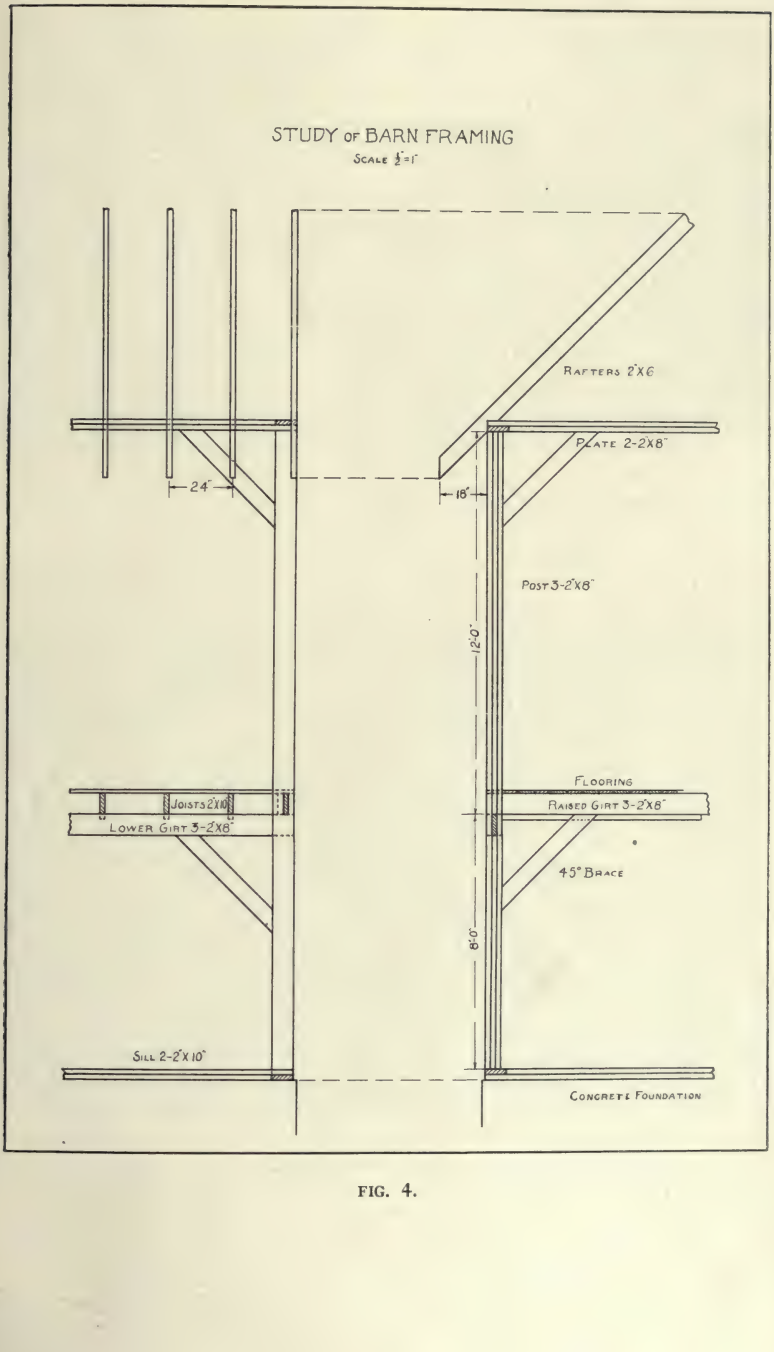

STUDY OF BARN FRAMING
SCALE ½"=1'
RAFTERS 2"X6
PLATE 2-2"X8"
24"
18"
POST 3-2"X8"
12'-0"
FLOORING
JOISTS 2"X10"
RAISED GIRT 3-2"X8"
LOWER GIRT 3-2"X8"
45° BRACE
8'-0"
SILL 2-2"X10"
CONCRETE FOUNDATION

FIG. 4.

Up to this point the boys have worked from blueprints furnished them, but when they make the cornice, sill, and girt details of the barn they work from their own drawings, of "balloon" construction, which have been previously made during the drawing periods, Fig. 4. Half-size, or 1″x3″, stock is used. The joints involved are end-lap and mortise-and-tenon.

FIG. 5. POULTRY-HOUSE MADE FROM A PLAN ISSUED BY THE UNIVERSITY OF WISCONSIN.

Group VI takes up simple carpentry, as the framing of a poultry-house $\frac{3}{16}$ size, see Figs. 5, 6, 7. The material used is in proportion to the house. It is difficult to handle such small material, but the poultry-house being a very simple structure, fairly good results may be obtained. The most essential processes are cutting rafters, building doors, putting up dropping board and roosts.

The boys are divided into groups of four in working on this problem. We have found by experience that it is difficult to keep groups of more than four boys busy when working with such small material and on so small a project. A foreman is appointed for each group, and his duties are to direct the work in a general way. He is selected from the boys who have made the best grades up to this time. This is an incentive for each boy to do his best.

As we have no power saws in the shop, the material is sawed at the planing mill. Scrap wood of white pine, tulip, basswood or any other material that does not split easily may be converted to this use at a small expense.

It may seem strange in Group VII that a tabouret is made when introducing a course of rough wood, but as this class is working in the same room where boys from the city are making pieces of furniture, they too, are desirous of making something that is beautiful that they may take home and keep. Also, while making this they have time in their drawing periods to complete the plans of their barns. The tabouret that is made is one designed by C. S. Van Deusen. This project involves the making of keyed, mortise-and-tenon joints, glued, cross-lap, and slip joints. The material is given $\frac{1}{4}$″ wider than finished width and

FIG. 6.

FIG. 7. POULTRY-HOUSE DESIGNED BY ONE OF THE BOYS.

$\frac{1}{8}''$ thicker. The planing up and laying out of duplicate parts is a vital part of this project. Boys have a choice of either fuming or staining the tabouret when finished.

All boys are greatly interested in barns, and for our last problem, model ones are made, see Figs. 8 and 9. The two types, "framed" and "balloon", are built by different groups. Also two types of roofs are constructed, the gable and gambrel. By using these two types the boys have the opportunity to compare the value of one with the other. The most important part of this work is the making of the concrete foundation, and the cutting of the rafters and the braces.

FIG. 8. MODEL BARN, FRAME CONSTRUCTION WITH GABLE ROOF.

FIG. 9. MODEL BARN, "BALLOON" CONSTRUCTION WITH GAMBREL ROOF.

There are more parts to a barn than a poultry house, making it more difficult to construct; therefore, the small material is a disadvantage, and instead of using material in proportion to the size of the building, we use material which is a little larger—that is, for a barn made 1/12 size we use stock $\frac{1}{8}$ size. However, all dimensions must be taken from the center of one piece to the center of another. As before, the boys are divided into groups, but new foremen are appointed.

III. CONCRETE.

In all classes some students work more rapidly than others and to supply them with extra work, problems in concrete are given. Since

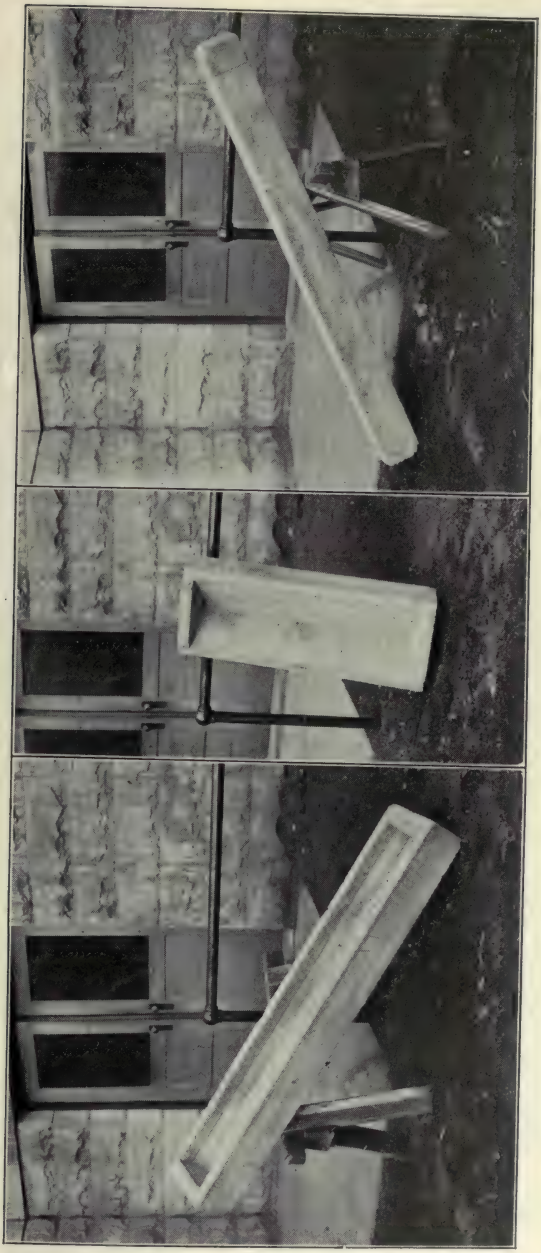


FIG. 10. FENCE POSTS AND V-SHAPED AND SEMICIRCULAR TROUGHS HAVE BEEN MADE IN CONCRETE.

concrete is being used as a building material on the farm as well as in the city, it is worth while to teach the rural students its value and use. Concrete is easily made and is cheap, and it is possible for the work to be done at a time of the year when the farmer is not busily engaged in his regular farm work.

A separate course should be introduced, but since it is impossible for us to do it, much valuable information is derived from constructing the different forms and molding the problems assigned.

Our first problem is testing the sand. This is done in two ways: first, by placing the sand in glass jars and covering it with water. After shaking it well the sand settles to the bottom and the loam remains on top. If more than 5 per cent of loam is found, the sand is not used.

FIG. 11. GARDEN SEAT IN CONCRETE.

The second method is that of making a form with sand and cement 1″ square and 12″ long. A weight is placed in the middle and the points of support are 10″ apart. If this rectangular prism, after seasoning 7 days, supports a weight of 12 pounds, it is sufficiently strong, but if less than that something is radically wrong with either the sand or the cement. This test is taken from "Cement and How to Mix It" by Radford. Each new problem that arises in either the building of the form, reinforcing, or mixing, is discussed in class. Our greatest problem so far has been in getting enough draft on the core to make it possible to take it from the concrete.

Fence posts of different designs, V-shaped and semicircular troughs, garden seats, and pedestals have been made, see Figs. 10 and 11. The most important part of this work is the making of the forms and reinforcing.

The Universal Portland Cement Company and the Lehigh Portland Cement Company have been very kind to send each student bulletins issued from their offices, particularly those containing information on "Concrete on the Farm." "Concrete and Garden Furniture" by Ralph C. Davison, and "Concrete and How to Mix It" by Radford have been very valuable references. The following is an outline of the course in cement work:

CONCRETE FOR FIRST YEAR HIGH SCHOOL STUDENTS.

PROCESS	TOOLS AND MATERIAL	APPLICATION.
Making simple form for testing concrete. Mixing ingredients.	Saw, hammer, shovel, trowel. Sand, cement, linseed oil, 1″ stock.	Test problem.
Reinforcing with No. 9 wire. Construction irregular shaped form.	Saw, hammer, jack-plane, shovel, trowel, tamper. Sand, gravel, cement, No. 9 wire, 1″ stock.	V-shaped trough.
Forming semicircular trough. Reinforcing with wire netting.	Chisel, spokeshave, dividers, No. 9 wire, 1″ and ¼″ stock.	Semicircular trough.
Reinforcing when strain may be from any side.	Small rods or very large wire, 1″ stock.	Fence posts of different designs.
Making a form that will produce a design on finished project. Tooling.	No. 9 wire, 1″ and ½″ stock, 1″ fillet.	Garden seat.
Making two parts. Study of design.	No. 9 wire, 1″ and ½″ stock, 2″ quarter-round.	Pedestal.

THE UP-BRINGING OF A TEACHER: AN OPEN LETTER TO THE MANUAL TRAINING TEACHERS.

ARTHUR D. DEAN.

I HAVE wanted to write on this subject for a year; but the editorial column has its limitations. One is confined to the impersonal "we", and just for once I should like to use the pronoun "I".

The subject which I have chosen rings in my ears. I am quite obsessed by it; possibly because my work brings me into contact with situations which require good teachers; possibly because I am interested in the progress of young men. My determination to write upon this subject was crystalized by the remarks of a well-known educator who had been searching about a year for a man to take one of the best positions in the field of vocational education. He said to me, "I can not find such a man". And with the set of a square jaw he added, "Is there no way that the young men now in the movement can be made to see that as administrators of vocational work the future opportunities for service, yes, even salary, are bound to be enormous and that now they should be getting themselves ready for the great development which is bound to come?"

"What is the trouble?" I inquired.

"Why, simply," he replied, "that the men I have seen seem to lack vision and background. They have had plenty of schooling but not enough education."

I should like to discuss with you this statement. It will do all of us good to examine it. But right at the start I wish you to understand that I am not writing from the "better than thou" standpoint, and that neither modesty nor egotism enters in. I am but the editorial "we" who steps down from the editorial chair and stands literally on the ground with the reader.

I trust that you feel like that old salt and man-of-war's man, "Old Rogers," as related in George MacDonald's "Annals of a Quiet Neighborhood," who in talking to the new vicar of Marshmallows, indulges in this homely philosophy:

"I ain't a bit frightened of a parson. No; I love a parson, sir. And I'll tell you why; sir. He's got a good telescope, and he gits to the masthead, and he looks out. And he sings out 'Land ahead!' or 'Breakers ahead!' and gives directions accordin'. Only I can't always

make out what he says. But when he shuts up his spyglass and comes down the riggin' and talks to us like one man to another, then I don't know what I should do without the parson."

So let me "come down the riggin' " and discuss with you the up-bringing of a teacher. Of course no one knows whether teachers are born or made. If they are born, then fate is often very unkind. If they are made, then let us see to it that they are hand made rather than machine made. But personally I would rather think of them as being unfolded and that in the process they themselves can directly control this unfolding, and can change themselves, so to speak, from a cabbage plant type into a cauliflower, or even into a rose. In this respect human beings differ from plant life. It was Mark Twain who said, "the only difference between a cauliflower and a cabbage is that the former has a college education."

I seek for some illustration which will convey the impression which I wish to leave with you. Ah, I have it! The up-bringing of a teacher is like the making of a picture. I like this illustration. It is worth considering. First, there is the background on which the paint is to be placed. Second, there are the oils, the colors, the brushes and the tools, in short the materials for technique. And finally, there is the sketch—the idea—the message, which is to be expressed.

THE ESSENTIALS OF SUCCESS.

In common with others who are in public service or in a work which closely touches public affairs, our success depends very largely upon our ability to comprehend the importance of linking together these three elements: background, technique, and vision. Most of us are altogether too much concerned with the tools which we use in our work. It should be taken for granted that we have the requisite technique or else we have not the merest elements for success. It is taken for granted that you know how to push a plane, read a drawing, figure out a gear table, and the thousand and one things which enter into the technical efficiency of an industrial teacher.

However, the work at hand is bigger than a tool process or a machine tool table. To continue the illustration, you are about to paint a picture. Now some of us like to paint castles in Spain, others like to paint on some more permanent canvas our ideal, whether it be a home of peace and understanding, a school filled with happy and

worthy children, an institution for the up-lifting of the human spirit, or a pile of bricks and stones harboring mighty industrial forces. I say all of us like to paint pictures and you, my reader, are no exception.

THE TEACHER'S PERSONALITY.

Clearly the background must be thought of in picture painting for on it we are to paint this wonderful masterpiece—the child of our ideal. You are now a young man of twenty-five. And you—like all of us at twenty-five—must have your dreams and visions and desires. That background of yours must hold the color. It must stand the test of weathering time.

A background is a wonderful thing to bring to a work. The college or training school contribute some of it. Not much, however. Naturally it thinks that it does and like other educational institutions it talks a good deal about its background. What can a college do for a young man if the eighteen precious years before he comes to it have been thin-souled, cheapened, narrowed? As a matter of fact, your canvas has been prepared all along the line of your twenty-five years. From the day of birth all of us helped shape it. It is really a wonderful thing—this background. It may come out from a home of poverty and necessary simplicity. It may come out of wealth and unnecessary luxury. It may come from the home of a Lincoln and a Nancy Hanks, or from the fireside of a man of letters and a wholesome simple-minded mother. It may be associated with only three books as was Lincoln's, and may be lit by a pine torch, or it may have a five hundred foot shelf and lighted by a silvered electrolier. It consists not at all in what externally we see, but in what there really is. You are to be an aristocratic Democrat—but a snobbish background never yet held the paint of Democracy. You are to be simple and elemental, but closet skeletons of prejudice and littleness and falseness never will bring these fine qualities. Yes! the background is important.

THE TEACHER'S TECHNICAL EQUIPMENT.

The technique or tools of production come next. Your college or normal school, if you went to one, has given you these in abundance. In fact, its courses of study were full of them. It did the definite thing so well. It was particularly fine if the college made its tools of pro-

duction articulate with your visions and interpretations. For that I am glad. But it was expected it would. No artist can paint his masterpiece without knowing how to mix colors and how to handle his brush for desired effects. These things are assured. But whether the artist is to be a house painter or an exhibitor at the Salon depends on another quality—what he intends to paint. All this we will call the vision, or power of interpretation.

I hope in painting your vision that you will fare better than the artist who painted a great picture which many came to see.

"Wonderful!" they exclaimed. "So clever! So original! What perfect drawing! And the coloring—so strong and yet so full of atmosphere!"

A friend meeting the artist, congratulated him on winning such appreciation.

"Appreciation!" repeated the artist, bitterly, "I painted a vision, a message. And they praise—my technique." [From the January *Craftsman.*]

Most of us fail in painting anything out of the ordinary. It is simple enough. We limit ourselves to the ordinary. We think in terms of it and we defend our work on the basis of a false perspective, and a mighty poor background. Much credit should be given to your college or normal school for its endeavor to give you an outlook—a vision. It is almost the all important thing. If Millet had been blind to the simple, everyday things in the life about him, we should never have had l'Angelus. If Whistler had seen only the pretty face of a society woman, we would not now look with admiration on his "Mother". If Frederick Remington had always copied European art, we would never have had a permanent history on canvas of a western life fast disappearing. It takes a Pennell to see in the streets of a throbbing, cosmopolitan city, the portrayal of a mighty civilization. Yes! you must have the vision of interpretation. I will sketch it roughly for you.

THE TEACHER'S VISION.

You have before you the picture of poor little children in your own city who need schooling, nourishing food, strong heritages. You see their parents submerged by the economic pressure. You see all about you the waste of human wealth. Out of it all you feel that there are no bounds to the moral, mental, and spiritual capabilities which might unfold under ideal civic, industrial, and educational conditions.

Now you are ready for business. The canvas is prepared, the tools are sharp for use, the vision is clearly defined. Contribute you must to a solution of the problem. Irresistible forces urge you on. They are bred in your bone.

The problem is large. Too large for one person. That we know. It is part of a new civilization—a forerunner of changes to come. The picture is no longer a simple scene. It is not l'Angelus of fields, of a village in the distance, with the hoe under foot. It is the picture of Modern Industrialism. It is the picture of blast furnaces, of tunnels, of automatic machines.

Within our own existence America has broken away from the past. From top to bottom the economic conditions are absolutely changed. The life of the people has grown infinitely varied. No operations whether of business, industry, or living are as men used to carry them on. A new stage setting for the drama of life has been raised and you, my reader, even as I, are one of the actors.

Men are still struggling under old laws and public policies in a new world of industry and society. Before our eyes men are questioning whether the old must not give place to the New. We must see that another revolution is to come. Not a National Revolution, but a social revolution. The Barnacled Ship of State held back in its progress needs scraping and overhauling. The size of the mass and the variety of its incumbrances sometimes appalls us. Surely it is a stupendous program —a program for revised educational practice, for economic adjustments, for a new moral awakening.

The contribution which vocational education is to make toward a solution of present problems is small. I regret that it is such. You and I would like to be a Michael Angelo, a Raphael, a Millet, and a Remington all in one. But each must be alloted one vision of the whole.

THE TEACHER'S TASK.

Do you get my point? How I wish I might make it clearer. I have visioned you as a future leader of the vocational education movement. You must be a Democrat, and yet your Democracy must not be mistaken for coarseness or familiarity. You must be aristocratic, and yet your aristocracy must not be interpreted in terms of snobbishness. For a day you will be in the halls of legislation, then a moment in the union headquarters, next facing a teachers' institute; then addressing a woman's club; then devising a course of study; then inspecting a school; then

developing a plan of cooperation between employers and employees; and then before a city council appealing for increased appropriation for your work.

To you young people your great venture is yet to come. You have the canvas, the paint, the brushes, the cunning of technique. Your masterpiece for the Salon is yet to be painted.

You are ambitious. Who isn't? But genius is the capacity for hard work and luck is but the thing that comes when opportunity and ability meet. You all recall the story of Michael Angelo and the visitor. The latter said, "I don't see that you have done anything to this model since I saw it two weeks ago."

"Oh, yes I have," was the reply, "I have added a bit of clay here and taken away a bit there."

"But these are only trifles," spoke the visitor.

"True," responded Michael Angelo, "but you must remember that perfection is no trifle."

Yes, perfection is no trifle; luck is no chance game; indifference does not produce individual capacity. One can no more develop capacity by resting on his job than he can learn to spell by sitting on a dictionary. One cannot grow by teaching year after year the same models or projects. One cannot broaden thru quarreling over that supposedly momentous question of whether the dish-drain model comes before the knife-box.

The program of progress is reading, 'riting, 'rithmetic. I mean the reading of articles and books bearing upon your work. I mean the writing of articles descriptive of what you are doing. I mean the "figuring out" of what you should teach.

A word as to reading. One should subscribe to at least one professional paper; not borrow it. If there are a number of you associated together, it is possible to form an exchange club. The local library will gladly purchase the list of books on technical subjects. It will place on its shelves the new books which are appearing relating to industrial economics and social problems.

A word as to the writing of articles. Clear thinking produces clear writing. One of the best ways to clear up a mental fog is to start a breeze in your own mind. You may have broken away from the "coat-hanger, sleeve-board, bench-hook" course. You may have a course in electrical toys, or pipe cutting, or tinsmithing. Tell us about it, so that we will look up on the map the town which you give as your address.

It may have a railroad leading to it and if it has not, surely a beaten path will soon be made to your door.

A word as to "figuring out" what you are going to teach. Are you going to teach the same course that Smith teaches over in Jonesville just because you saw it printed in some report? No! You are going to visit the local factories, talk with the heads of the various departments, discuss the local needs. We can learn much from such visits and besides the employers will get acquainted with your own capacity. You may see some of your former students and they by their pleasant nod will express approval.

And finally I urge you to be a "good joiner." You may not be in the position to take a "junket" at the expense of the city. You may be obliged to put your hand into your own pocket when you go to a convention. But it pays. Its dividends may result in more returns than Western mining-stock. You will meet other fellows. Some one will say, "Oh, here comes Brown, he is the fellow that has started a vocational school in his town; let's see what he has to say for himself." One can so plan a trip as to take in several cities either before or after the convention. The best men, those who are doing the better grade of work, usually return home rather discouraged, while those who are doing the poorest work come back with a self complacent smile. An ostrich hides his head in the desert sand and then believes that he is safe. Some teachers bury their heads in their own notions and feel the security of an ostrich.

THE TEACHER'S OPPORTUNITY.

I am not advertising magazines, or selling books, or seeking your membership in professional associations. I simply want you to get ready for that fine position which will knock just once on your door. I can assure you that if you are asleep opportunity will not come in and pull you out. It may, and perhaps, will, go over to your school as an unannounced visitor, look over your equipment, your courses, talk with you most casually about your work, your ideas, your visions. It may walk out without a word and the next mail may bring its offer of a new field of endeavor. If you ask opportunity for a job it may say, "Send in your application and it will receive due consideration." Emphasis is on the "due". You will never hear from it again. *Opportunity* is a strange fellow. But when he is met by *ability*, they become bosom

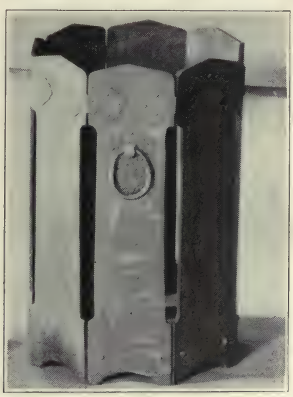
companions and beget *luck*. And then, the world says, "He's a lucky fellow; he gets all the plums."

Yes he does. But we forget that he watered and nourished and tended the plum tree while you may have been asleep, or building that canoe during school hours, or gossiping about the man higher up.

Have you ever watched the unfolding of plant life? We select with care our seed or seedling. We water and nourish it. We have been told that it is to bear fruit. If we plant an elm we hardly expect apples. If we buy a seedling of a Baldwin, we may get only a crab apple. But all the same we nourish the soil. How slowly the tree grows. Will it ever bear fruit? There is our neighbor's orchard adjoining it in full bloom. He is soon to harvest. Will our tree please hurry up! No, it will not. But some day it blooms and we see in the October lights our Baldwin and then we know that the nurseryman told us the truth.

Some of your blossoms will fall. It is the natural law. A few will bear fruit, and then one day the silent soil, the nourishment given with loving care, the struggles of the seasons, your education, your work, your inner forces, will burst forth into their fruitage.

Now, my friends, pick up your canvas, note whether it is well prepared, patch it if necessary. Select your best brushes and finest colors. Discover some message that you can portray effectively and when you are thirty-five we will visit the Salon and award to you the gold medal of attainment.



FROM A CINCINNATI HIGH SCHOOL.

ROOMS IN PAPER.

PROBLEMS IN CONSTRUCTION AND DESIGN.[1]

VI.

NAMA A. LATHE AND ESTHER SZOLD.

SOME ACCESSORY FURNITURE.

WALL CABINET.

A cabinet which may be suspended upon the wall is often very useful and desirable. The size and shape of such a cabinet may be varied to suit the purpose for which it is to be used and the place in the room which it will occupy. Varying the proportions of the entire object requires a greater power of imaging than the variation of spacings within a definite limitation. For this it is necessary to be able to think in three dimensions and to be able to recognize definitely the relations between the different lines of the pattern.

It will be easier to present this problem of variation of proportions to a class if the teacher has a larger model, complete, and but lightly pasted so that it may be opened and re-folded to show the construction. Tho by this time the pupils' experience in working from drawings should enable them to form quite a definite and correct image of the complete object by comparing the pattern with the perspective view.

Fig. 33 shows the pattern for the wall cabinet without the addition of pasting laps. It shows the relations of the lines by having in the place of dimensions the same letter for those distances which must be equal to each other.

One must refer to the scale of ⅛″ to an inch to determine whether the cabinet planned will be suitable for its purpose.

The spacings of the doors, which are supposed to be glazed, and the arrangement of the rails and braces below the box give added opportunity for thoughtful design. These must be planned in relation to each other as well as with regard to the necessary strength and lightness of the cabinet.

SPECIAL FEATURES IN CONSTRUCTION.

See Fig. 33, Fig. 34, and Fig. 34A.

The cabinet shown here is the one which appears in the photograph of the dining-room.[2] For original designs use dimensions chosen and follow this order in construction.

General Order:—Note that line *X* is the top of the cabinet.

Draw, score, cut, and fold. Fold first on line *X*.

Hold the pattern in shape before doing any glueing.

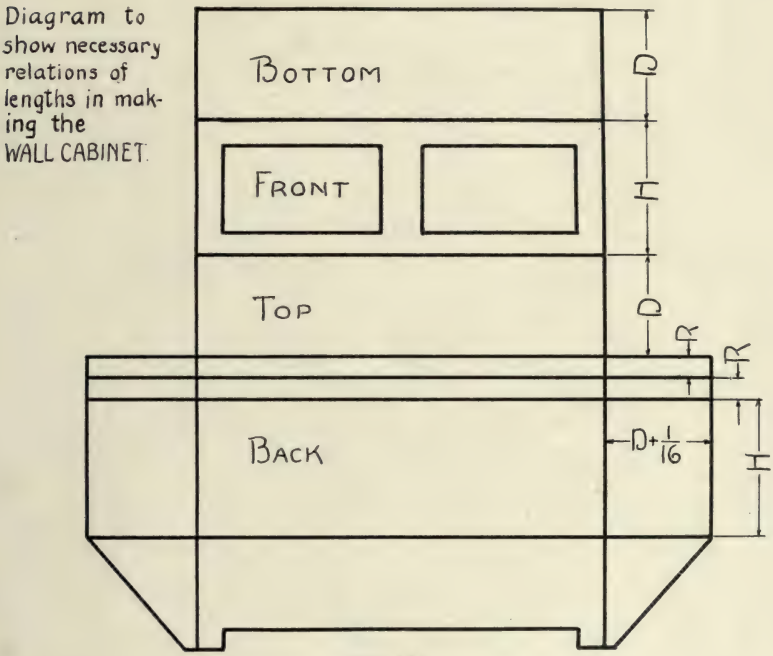


FIG. 33.

ORDER OF PASTING.

Extension of the back and sides:—Fold on line *X* and paste the strips between *X* and upper and lower *Y* together.

Strengthening Braces:—Paste the laps on the diagonal lines of the side sections flat against the paper adjoining them.

[2] See the February, 1912, Number, p. 207.

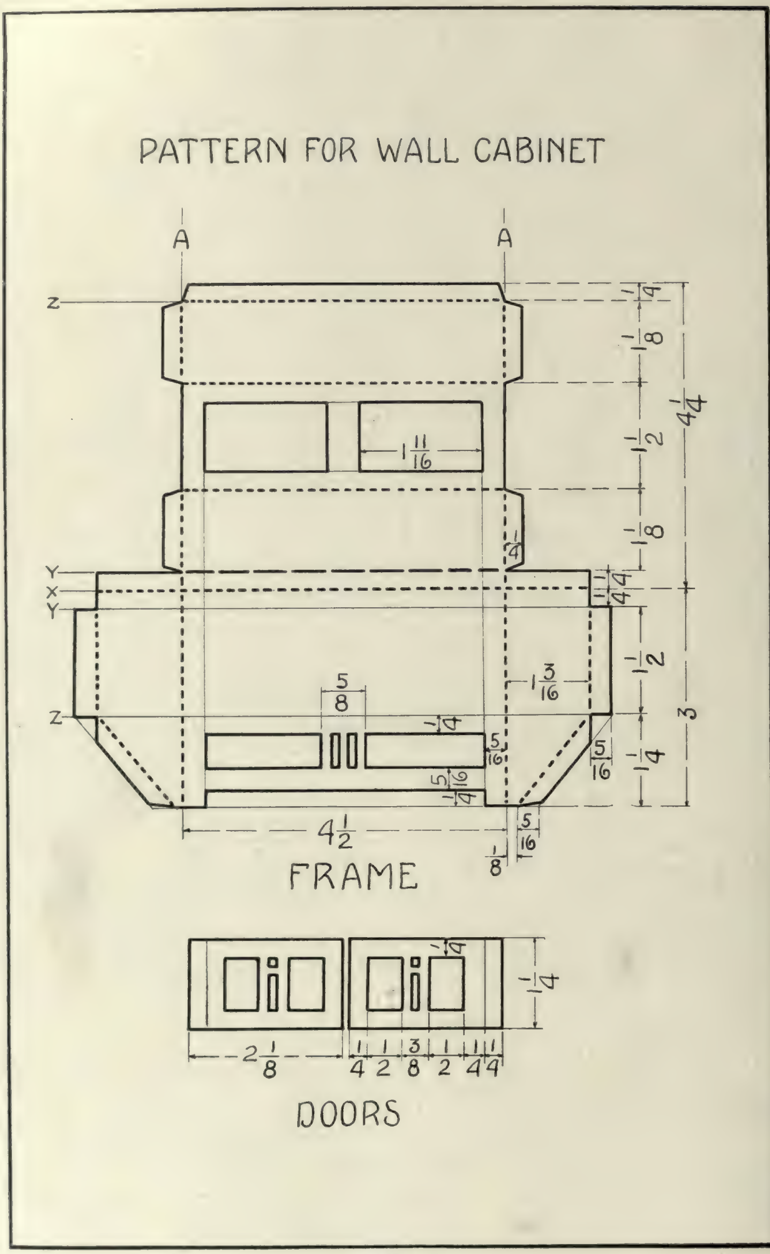


FIG. 34.

The Box:—The first space above upper *Y* folds forward and forms the horizontal top of the box.

Spread glue on the unlined side of the pasting laps above upper *Z*. Paste against the frame so that the fold on upper *Z* falls exactly upon lower *Z*. A ruler may be inserted to press in place while drying.

Paste the laps of the top and bottom of the box to the side sections. The door openings of the front are necessary to permit pressing these laps in place.

Doors:—Lay the cabinet upon its back. Adjust the doors. Fold the laps on the side sections over the pasting laps at the back of the doors. Note where they fall.

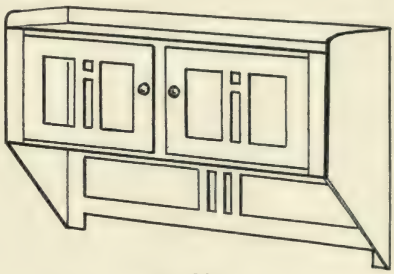


FIG. 34A.

Lift one lap and door carefully and mark the placing of the door on the inner face of the lap. Glue in place.

Glue lap of the side section to the side rail of the door opening. Repeat with the other door.

Punch holes and insert the tiny paper fasteners which serve as knobs.

The Cabinet:—The cabinet is hung on the wall by means of thumbtacks thrust thru the back.

CLOCKS.

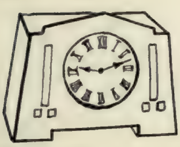


FIG. 35A.

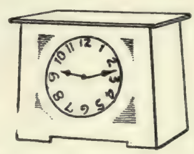


FIG. 35B.

First Clock:—See Fig. 35 and Fig. 35A. The central oblong of the pattern is in the base of the clock.

There is excellent exercise of judgment possible in making variations for the outline of the front of this clock. This designing reverses the order of procedure which we have used before, in that a shape to be surrounded is pre-determined and the outline of the form is dependent upon that. The face should seem the natural center for the contour of the clock. To obtain this result the size, shape and exact location of the face must be considered in planning the outline, and the variations of the outline made to respond to the shape of the face.

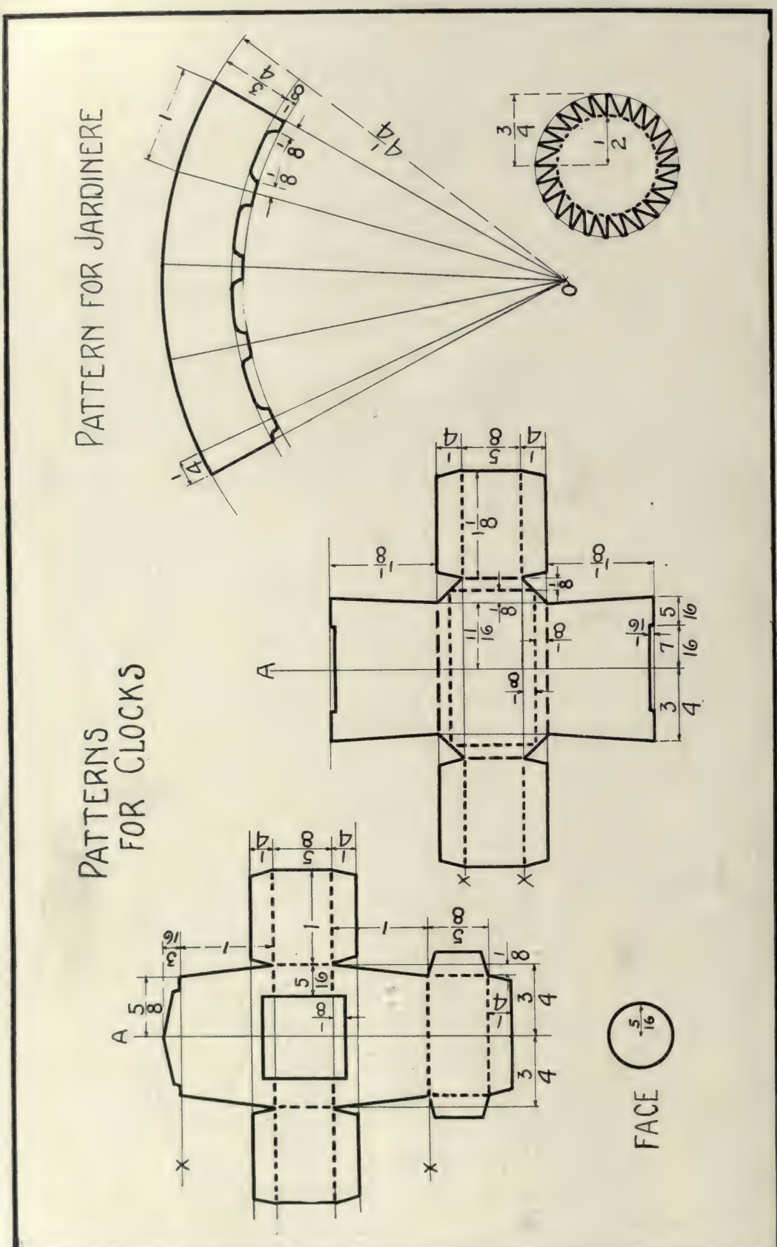


FIG. 35.

Decoration:—The front of the clock may be decorated by drawing the shapes chosen upon the front of the frame before it is stained, or by cutting the shapes from paper and mounting them upon the form after it is stained.

Face:—The face of the clock may be made larger or smaller than indicated, if desired. The figures and hands should be drawn upon it and the face mounted after the frame is stained.

The place for the face should be determined before any pasting is done and a pin pricked thru line *A* to show the location of the center.

Order of Pasting:—Paste the side sections in place, with the laps inside the front and back sections.

Spread glue just inside the top of the side sections and below the pasting line of the front. Turn the laps of the top down and slip them inside the frame. Insert the finger thru the opening in the base to press them in place.

Second Clock:—See Fig. 35 and 35B. For suggestions for decoration see under directions for first clock. The oblong at the center of the pattern is at the top of the clock.

Pasting:—This clock with projecting ledges requires careful pasting. Paste the ledges around the top first.

Paste the sides in place putting the laps inside the front and back sections.

FIG. 35C.

JARDINERE.

See Fig. 35 and Fig. 35C.

From the center *O* draw the arcs showing the height of the jardinere between them. Place the arc indicating the height of the feet.

The radii shown in the pattern, with the exception of the first and last, are construction lines only. They provide points for measuring the width of the feet, and help in locating any decoration.

Pasting:—Glue up the frame. Fold the laps which are around the

circle for the bottom. Turn these laps upward, touch the outside of each with glue and push the bottom down into the conical frame of the jardinere until it fits closely.

FERN.

See Fig. 35C.

Some fine spool wire, green tissue paper, glue, and a bit of tea lead are required for making the fern. Several fronds may be cut at one time by folding several thicknesses of tissue paper together. Cut tapering strips of paper from two to five inches long and from ½″ to ¾″ wide in the widest part. Notch the edges and separate the fronds.

Cut pieces of wire somewhat longer than the fronds. Rub a little glue along the wire and fold a strip of the notched paper about it, leaving the surplus wire at the bottom of the frond.

The "roots" of the fronds may be fastened together by twisting the ends of the wires together. Wrap the twisted ends of the wire in a piece of tea lead to provide the weight necessary to hold the fern upright.

Curl the fronds by bending the wires as desired.

CANDLESTICK.

See Fig. 36.

Candlesticks may be made from writing paper. Decide upon the height and width desired for the candlestick, base, and rim. Cut two circles the width of the base, and glue them flat together. Do likewise for the rim.

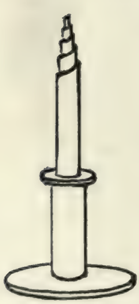


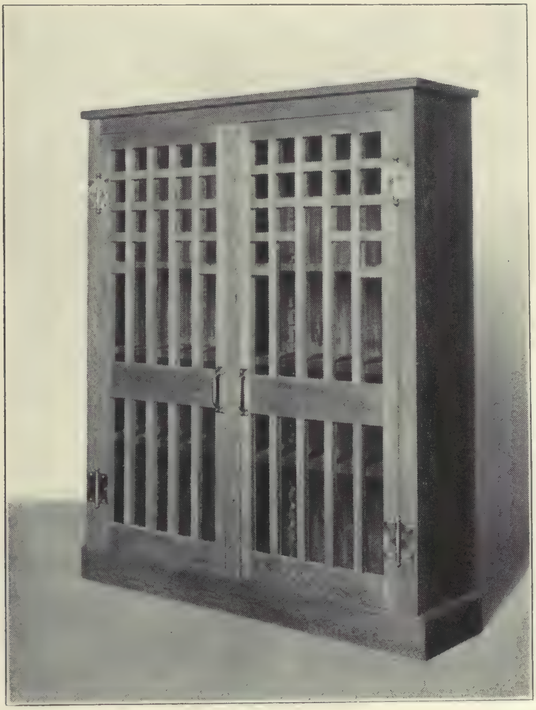
FIG. 36.

Carefully cut a strip of paper the height desired for the stick and from five to ten inches long. The length necessary depends upon the thickness of the stick desired, the thickness of the paper, and how tightly it is rolled.

Make a tight roll of this strip, cutting off the end of it if necessary, to keep the candlestick as slender as desired. The ends of the roll should be flat making an almost solid cylinder of paper. Glue the end of the strip to keep the cylinder from unrolling. Glue the circles for the base and rim in place upon the ends of this cylinder.

Cut a shorter strip for the candle; taper one side. Begin to roll the candle at the wider end of the strip. Paste the end of the strip.

Paste the flat end of the candle upon the center of the top rim of the candlestick.



FROM THE W. W. WHITE CRAFT SHOP,
INDEPENDENCE, IOWA.

EDITORIAL

ONE of the very important results of the new movement for industrial education has been to dispel certain false notions and illuminate certain shortcomings or misconceptions which have held persistently in public education.

Why Children Leave School For example, it has been commonly accepted as fact that the reason for the great loss in public school attendance at about the sixth year is due largely to exigencies in the home, to financial pressure, to the necessity that children become helpers in the support of the family. That this is a false conclusion is clearly shown by recent careful investigations. Statistics may vary in different localities, but in a general summary it is safe to say that not more than ten percent of those who leave school in the higher grades do so from necessity. Systematic questioning upon this point brings answers that are clear and unequivocal, and leads to undeniable conclusions. Children leave school because they do not like to go to school, because the work is distasteful to them and offers them little or nothing that they conceive to be of value in their lives. It is useless to attempt to explain the great loss in school attendance on other grounds. We may persist in our assertion that our courses of study are liberal, but we must admit the fact that they do not appeal to the great majority of children. The call to abstract preparation for later life has not the appeal of the concrete activities of the life of the present.

Democracy In Education Another belief which has persistently obtained is that our public schools are a democratic institution. They offer the same opportunities to all classes of children—equal opportunities to all. The first statement is true, or nearly so. The second would be true if we assume that all children are modeled mentally and physically upon exactly the same plan. But such is not the case, for child life is in every way marvelously diversified and any uniform system or method of education cannot be other than discriminating against the individual needs of the children. Assuming that all children fit exactly the same mold, no one would hesitate for a minute to say that it would be undemocratic to offer different educational opportunities to different children. Our school courses are

emphatically specialized. They bend their energies toward preparation for college and professional education and deal almost wholly with abstract images and unrelated facts demanded by preparation for higher education.

Industrial education emphasizes a new conception of democracy in education and focuses attention upon the diversity of educational needs as represented by the individual, rather than upon the molding of the individuals to the uniformity demanded by the prescribed course of study. Democracy in the schools of the future will be shown in their effort to meet the needs and develop the natural powers and talents of the individual, and this of course means wide diversity in school work.

Living In School Another misapprehension that comes more clearly to light under the scrutiny of industrial education is in our attitude toward the relation of the schools to life. We are accustomed to speak of our schools as preparing for life, but rarely do we speak of them as a place for life itself or a place where acquired information is related to the actual experiences or activities of life. The energies of the schools are devoted to the storing of knowledge which will be effective in the future career rather than in the present life of the child. Booker Washington put this thought very cleverly at a recent educational meeting when he spoke of our schools as devoting so much time to preparation for life that they can give very little time to actual living, so that when our school days are ended "our future is all behind us." We are coming to see that education has a very intimate relation to present life as well as future needs, and that life experiences may be made important educational factors. Living is really the most important thing in life and this fact should be recognized in the schools.

In all of which we are but revealing things that we have known before. They all tend to the fuller recognition of the educational value of activity, the natural means of development of the race and the child and the fundamental fact in life. —W. E. ROBERTS.

Need of More Time for Manual Training It is a common occurrence to read in a school report "our boys are leaving school as soon as they are fourteen * * * unprepared for their future work * * *. The neighboring towns of * * * and * * * have manual training courses. I suggest that our city establish such courses and recommend

that the boys of the upper grammar grades be given instruction in this subject for two periods per week."

Such a course of treatment for elimination and retardation reminds one of the proverbial mustard pot which is set before the traveller at the railroad restaurant. The mustard will serve to cover the bare spots between the tissue-like slices of ham and will aid in giving a relish to an otherwise dry crust of bread. But we must remember that there is no nourishment in the mustard. It only serves to make tasty a sandwich which needs in itself a more wholesome seasoning and more edible materials.

A manual training course of two periods a week is like passing the mustard relish to a dry educational sandwich. The boy leaves school, to carry the simile further, because the sandwich is made up of a thin slice of meat between the two crusts of traditional subject matter and traditional treatment. The boy does not like the bread; there isn't much meat, and so the superintendent passes him the mustard pot as a bit of relish.

It is not to be understood that one advocates the increase of time for manual training instruction from the standpoint of the mustard relish. Mustard itself has no nutritive value. The seasoning process should be injected into the materials making up the educational feast. The materials which enter into such a repast should assist boys and girls to see, to think, to feel, and to do. These activities are the natural inheritance of our youth and they cannot be developed out of books alone, or out of the teaching of facts, or apart from child experience.

The human race has had a long and rich heritage of growing things, making things, and living with realities. It stands to-day on two legs, has a brain development and a reasoning faculty because it met and conquered the problems of food, clothing and shelter; because it could raise crops; cut down the forests; build ships; dig into rich, earthy stores; fashion weapons; traverse continents; see the relation of cause and effect; feel the poetry of the brooks, the trees, the wind; see the changing seasons and purpose for them; and a thousand and one other qualities which center around a *life of feeling* and a *life of doing.*

If the early lizards, apes, and cave dwellers had been given Carnegie libraries, and in return had allowed their legs and arms to be bound, their eyes confined to the printed page, their experiences limited to memorizing what the experience of others had been, we should never have arrived at our present stage of development.

The race has back of it a rich history of achievement through motor activities. Only recently have we centered into cities; given over our children to school books and printed facts. Only recently, comparatively speaking, have we added the printed page to the educative process. But if the addition of fact teaching is to usurp entirely the natural and necessary development of human individual experience through manual activities, then surely later we are to pay the cost.

What Is Fundamental? The school superintendent who attempts to adjust his course of study to the needs of the race along activity lines, will be called a faddist and the people will say "Put out these fads of cooking, sewing, gardening, and manual training. We want the fundamentals."

It is not safe to call needlecraft, gardening, home decoration, and shopwork in wood and metal fads. It is rather a dangerous thing for us to treat in a careless fashion the question of introducing these things into the educational scheme. People do not always dig deep enough into the educative process. They constantly mix "schooling" with "education". They think of books and not bodies, of historical facts instead of human food, of mental discipline rather than moral durability.

Parents are willing to work the flesh of their hands to the bone that they may give their children an education in school and deny them at the same time a back yard, a set of tools, a garden, or an electrical outfit, because, as they phrase it, "We want Johnnie and Mary to get their lessons." Yes, Johnnie needs to get his lessons—and what are they? He needs the lesson of good health, of care of his body, of interest in the world of nature, of knowledge of scientific phenomena about him, of capacity for doing things, of knowing the relation of cause to effect—and lessons from books. The latter will tell Johnnie what the other fellow has done. It is well for him to know of these accomplishments. But if our Johnnie is himself to do things when he grows up, he must begin the process when he is a boy. One cannot get good health alone by reading about it, or sturdy legs by naming the bones, or good morals alone by studying preachments, or spelling by holding a dictionary; and how in the name of common sense can he learn how to do things except thru doing them; how can he learn to observe except by observing; how to be industrious except thru industry?

That is the way that the fond parent himself developed. It is

the way all men have developed. In the nature of things, Johnnie must develop the same way. For every shop removed from the old farm there should be a set of tools in the hands of the boy; for every water-wheel that has ceased to turn at the old mill, there should be a study of present manufacture and transportation of power; for every mother of the old order displaced, there should be a new mother who teaches her girls to do things; for every field displaced by the apartment, there should be a park and a playground.

Some Things May be Discarded There are some things we might well discard in the schooling of the child. We might discard the selling of imaginary bales of straw to imaginary customers, the huddling of forty young people together in a close schoolroom, the keeping of weaklunged children between four brick walls, the studying of birds, trees and brooks only from the geography, and the drawing of maps of Hindoostan when they do not know the streets of their own city.

Do not suspect for a moment that we are pleading for boys to learn to saw boards, or girls to cook merely because boards are to be sawed or food is to be cooked, or that to learn to do merely means the doing of the thing itself. It is a deeper question. It is the learning to do things because only through doing can the child be so developed that he can later on do for himself. We are urging that boys and girls learn to accomplish, learn to serve, learn to feel the pleasure which comes from a thing well done—not merely to learn to cook or to sew or to make wheels turn round or to make carrots grow. These are desirable enough in their way; but the thing that Johnnie or Mary will carry with them into the world is more useful, more fundamental, more important than board planing, or bread baking, or garment making, or carrot growing. *It is the ability to take hold ana accomplish a result because they have the background of previous accomplishments and results.*

Such a result is not to be gained by passing the mustard pot for two periods in a school week. —Arthur D. Dean.

Gilbert Burnet Morrison The ranks of the manual arts in education have lost a true comrade and an inspiring leader in the death of Mr. Morrison, which occurred on Thursday, February 6th. He struggled bravely and patiently thru a period of illness extending

over many months, continuing in the discharge of his duties as long as physical strength lasted. At about the opening of the new year, however, he was obliged to relinquish the active control of the school he loved, and to retire from the field where he had won distinction and honor.

Gilbert Burnet Morrison was born in Rutland County, Vermont, on April 21st, 1852. As a young man he came west and, in 1876, began teaching in the country schools of Missouri. He has been called a self-educated man, and so he was in the sense that he lacked opportunity to attend higher institutions of learning, so-called. He was one of those rare individuals who perceive that life itself is the highest institution of learning—a veritable finishing school, the postgraduate department of all formal school systems. To his conception of this great truth is due as much as to any other one thing, perhaps, his success in the special work he undertook.

In 1880 Mr. Morrison became superintendent of schools in Barry, Missouri, and later at Liberty. He kept up his private studies and was constantly endeavoring to increase his knowledge and skill as a teacher. It is said that his favorite studies during these years were the physical sciences and it was his original and thoro work in these subjects that first began to attract attention to him. In 1883 he was called to Kansas City as teacher of physics in the Central High School, where he remained for fourteen years. One of his colleagues writes: "He was one of the first to develop the laboratory method of instruction fully, and to advocate its claims at teachers' institutes and conventions. Altho one of the most modest and retiring of men, the solid worth of his classroom work, the literary skill and clearness of presentation of his lectures and articles in pedagogical journals, made him widely known in many educational centers of our country."

Mr. Morrison very early became interested in manual training and was active in the movement to secure it adequate recognition in the public schools. When the Kansas City Board of Education began a study of plans for a Manual Training High School he was an important factor in the organization and development of the school, and, in 1897, became its first principal. The school met with marked success and in six years reached an enrolment of 1,800 pupils. Visitors from all parts of the United States and from abroad came to study its organization and methods.

In 1903, Dr. Calvin M. Woodward presented Mr. Morrison's

name to the trustees of Washington University, Saint Louis, as a candidate for the honorary degree of Master of Arts, in recognition of his services as an educator. The degree was promptly conferred. A year later Mr. Morrison was invited to come to Saint Louis as principal of the new McKinley High School, and he undertook the work of organizing the school. Here he remained to the end, influencing and inspiring pupils and fellow teachers alike, standing for high ideals and noble purposes, and himself endeavoring to live the life he sought to lead others into.

At his death the entire city mourned. On Friday, February 7th, memorial exercises were held in the auditorium at which addresses were delivered by Dr. Woodward, Superintendent Ben Blewett, William R. Schuyler, acting principal, McKinley High School, William M. Butler, principal, Yeatman High School, and Miss Mary Fischer, who formerly taught with Mr. Morrison in Kansas City. The following paragraphs are taken from Mr. Butler's address, referring to certain of Mr. Morrison's personal traits:

He was deliberate. He never permitted himself to be hurried into action until he had taken time to be sure of a full understanding.

He was exact and exacting. Always careful to know whereof he spoke, he rightfully asked the same of others and had little patience with the careless or the blunderer.

He was sincere. Of transparent honesty of purpose, he never allowed himself to mislead another.

He was obstinate, in holding fast to the right. When his mind was made up he adhered to his views regardless of whether they chanced to be popular or not. He would insist on the right, and usually won his opponent by his very steadiness of purpose.

Lack of space forbids quotation from the resolutions adopted by the Board of Education of Saint Louis, the Principals' Association, and the faculty of the McKinley High School. The leading newspapers of the city, in addition to full accounts of his life and work, commented editorially on the value to the community of the example of a life so worthily lived. —William T. Bawden.

ASSOCIATIONS

BOSTON MANUAL TRAINING CLUB.

In 1911 the Boston Manual Training Club revived the custom of having an annual "Get-together Dinner," which was repeated last November. We were very fortunate in securing excellent speakers: Dr. Franklin B. Dyer, superintendent of schools, Boston; Professor Walter Sargent, University of Chicago; and William T. Bawden, managing editor of the MANUAL TRAINING MAGAZINE. In addition to these gentlemen, the following guests of the Club, altho they were not aware that they might be called upon, very kindly consented to add to the enjoyment of the occasion: Dr. David Snedden, Commissioner of Education for Massachusetts; James Frederick Hopkins, principal of the Massachusetts Normal Art School; and Maurice P. White, assistant superintendent of schools, Boston. Extracts from the stenographer's notes of the speeches are given below.

Edward C. Emerson, Secretary.

MANUAL TRAINING AND INDUSTRIAL TRAINING.

Alvin E. Dodd, president of the Club, introduced the speakers. Before doing so he related the legend of Simon Stylites who spent his life on the top of a pillar looking for perfection. How well this legend typifies the old monastic conception of education! Contrast this conception of the attainment of perfection with our present conception of education, in which change of emphasis we may look for some of the reasons for the manual arts occupying the place of importance in our educational system which they hold today.

Society must fit the boy to become an efficient social unit. Manual training is a means of contact with the physical side of human activity as well as of mental, and in the new conception of education these two are recognized.

There were those who thought they saw a conflict when industrial training came and found manual training more or less intrenched in the schools. Industrial training is alleged to have said that manual training is of no industrial value, and industrial training teachers have even been known to avoid association with manual training teachers in order that they might not be misunderstood in what they were working for.

Suspicion and fear of each other came, however, simply because each did not understand the vocation of the other, and because there has been a failure sometimes in the manual training and industrial training movement to recognize the need for accurate determination of vocation. Manual training and industrial training are parts of the same movement for efficiency, each supplementing the other. Industrial education will be most effective only when aided by strong courses in manual training as a preliminary to specialized vocational training.

There is a great need at the present time for intelligent and harmonious cooperation between the teachers of the manual arts in the elementary schools and those who are engaged in the work of the vocational schools. The true place and setting of training in practical activities of boys and girls under fourteen years of age needs to be defined. The aims and ends which it is possible for manual

training, as a part of the practical or liberal education, to attain need to be determined and checked up from time to time by the actual results. Only then will the work become effective.

We have been led to think that the business man insists upon specialized training of the boy on the part of the schools. But, after all, when you get to the root of the matter, when you get at what these men really feel, you find that what they want most are the old-fashioned traits of industry and interest and feeling of responsibility; and faithfully to bring that about means education for industrial workers much more than it does industrial training. The social and economic conditions surrounding the youth of our metropolitan cities did not affect boys and girls in the same degree when manual training was first employed as an educational means. When, therefore, we hear it said that manual training has been a failure, we may justly challenge the accuser. What we manual training men need is perspective, if we are to view these problems in their right relations

Manual training men, many of them, have been leaders in industrial education. The ones who very largely were responsible for the first effective agitation for the establishment of industrial education in these latter years are men who have been leading in the manual training movement. The most effective leader is he who has the best perspective. Perspective in education means ability to interpret the rapidly moving social changes of our times, and the demands which those social changes are making.

MANUAL TRAINING TEACHERS AND THEIR PROBLEMS.

Superintendent Dyer advocated that quality of leadership in a superintendent which not only permits, but encourages, subordinates to work out their ideas. If each man's powers can be freely developed—each man's ideas and power of initiative—results that are worth while are sure to follow. Whenever a fellow discovers an idea that looks promising, he should be permitted to try his hand. Dr. Dyer illustrated his point by describing a number of instances in his own experience as an executive in which he had allowed this policy to prevail.

"A young man came to me one day and said 'I left work as a machinist to come into the public schools as a teacher because I thought that possibly I could get back from the public schools into shops under the public schools. I believe that, if boys could be taught their mathematics, their reading, their business, in connection with the real thing, even those fellows who have abandoned the school because they were schoolsick would be awakened.' He was permitted to establish a school for apprentices. The method he evolved was to take a catalog of machines for a reading lesson, thereby teaching technical names and parts. The spelling lessons were arranged from the catalogs; the question of drawing was evolved; the process of blueprinting followed; the power to read the blueprints was developed. The machine might possibly contain levers leading to problems in physics. Their lessons in arithmetic were made real by such problems as calculation of the speed of spindles, and it was not difficult to make the lessons in geography, history, the story of iron or some other interesting problem tie directly to their catalog reading. We saw these boys change their whole attitude. Those who hardly knew their multiplication table, who did not know fractions,

who perhaps could not spell Wednesday correctly, who left school between the third and eighth grade, most of them below the sixth, became aroused and their higher powers developed. From looking upon their foreman as a foe and their employer as unutterably impossible, they came to have such a great interest in the machine on which they were working that their whole attitude toward their work changed. A larger percentage of them each year remained in the shop because of this instruction in school connected with the shop until now 75 per cent remain for a year at least. Their wages increased from nine, ten, eleven, and twelve cents an hour until often the third year boy was getting as much as eighteen or twenty-four cents an hour. The employers all testify that it meant a transformation of their shops.

"There was another man who took hold of the truant problem. His solution was to open the manual training shops more freely to the boys. He did not teach woodworking alone, but the manual training room became a sort of tinker's shop, a cobbler's shop, and all manner of others. The attendance in that school for that year leaped from one that was forced to the highest average in the whole city, and the work of the truant officer was discontinued.

"Another man took the work of the defective or moron children, making it his especial business to raise the child into the self-supporting class, and met with marked success. Jakey was fourteen years old; Jakey learned to read, and he could read the first page of the first reader; he also learned to put round pegs in round holes and square pegs in square holes, and he was very proud of his attainments. It was proved that it was possible to make boys of this type of some value to society. Jakey became a dish washer in a restaurant at $4.00 a week with some possibility of advancement, and he could wash dishes without breaking them.

"I do not know of any class of teachers who have greater possibilities than you in your special field. I do not know of any subject which is more fertile in unsolved problems, and problems that are pressing for solution than yours.

"What makes the teaching profession interesting is that there are so many problems to be solved. It seems as if every time we talk about it, the thing clogs up with problems—there are so many things that ought to be better than they are, and there is so much left to be done, that it is worth while to work, it is worth while to exert one's strength. Teachers of manual training and industrial education are to be congratulated on the great possibilities in their special field of work. It is a great thing to be specialists in a field which is certain to see great developments in the near future."

MANUAL TRAINING AND THE WORLD OF IDEAS.

Professor Sargent referred to the numerous discussions about manual training that we have been hearing at educational meetings during the past few years. The question has been fought out now so that manual training has a place in the elementary and high schools. There was a time when the old academic training was considered the best education, but now the classical training itself is on the defensive.

In the elementary and high schools I think that the honors are more than even for manual training. It is thoroly established and recognized, and it is pushing very definitely into the shop, and into our colleges—but there the bricks are

still flying. We do not know what the final result will be, but it has been worth while to listen to the discussion. It has been in the main the discussion of the new education, and out of it I have been able to clarify my ideas in a way that has interested me very much. Some have contended that manual training and industrial training are not educational subjects; others who believe in them have contended that they are; and the question has been asked: "What is an educational subject?"

To put it briefly, it seems to me that this is the way the higher institutions look at education: The boy starts out in life, and begins to get impressions, to see. He reaches out to get hold of ideas, and is all the while getting in touch with things. Soon his ideas come in so fast that they overwhelm him. If you will notice the child, you will see that after a few years he does not ask, *What is this?* and *What is that?* But he asks, *What is it for?* The child is trying to classify his impressions. The impressions come in so fast that he must naturally think in some way; even if left to himself, unaided, he will fall into the habit of thinking and doing. He will work out some way of dealing with experience, and after his thoughts have once become crystallized along a certain line, any new idea is not only not hospitably received, it is received with actual hostility. He feels hostile toward anything outside the range of his knowledge. Now, what education does is to assist one's opinions and habits to fall into lines, to give him new schemes of handling his ideas, and to keep him thinking, keep him working, until by and by, even tho he starts out on some one particular line, he finds it easy to accept new ideas. An educational subject is one which gives the individual broader and freer ways of classifying his experience into practical lines.

The discussion is still going on about the manual arts, and I do not presume to settle it. I simply wish to present this problem: The higher institutions all over the country are looking for men who can answer this question: How can we treat handwork so that it will lead into ideas? In the high school you teach the boy to handle tools and things, but no man can attain skill enough to carry him beyond what his handwork can do unless you lead him into the world of ideas. Lead him away from things as soon as you can. By means of plans he can sit in the world of thought, and by some representative means, like a pencil or otherwise he can plan out such things as may keep a hundred hands busy.

If, after the high school, you want to go on, what shall you do? They say teach the boys to deal with these things in terms of ideas, and they will be the men who will not later lay rails, and dig the roadbed with their own hands—they will project the railroad. They will sit in offices, and deal with ideas.

These higher institutions say that the real problem of manual training comes after the mere handwork of the lower grades. Can you so handle this work that it will lead out into the world of ideas, so that these people will be able to work with their heads? The child will not be fitted for some particular job as soon as he gets out, but he will be fitted to understand the industrial scheme, and to be a master of it instead of being ground up in the machine.

When a person gets so that he can sketch easily—acquires the power to use the pencil—it means that he develops different habits of thinking. He carries out his thoughts in different ways. He does his primary thinking—the experimental processes—in his head, and plans thus to the farthest detail before he touches

the material. Now, the problem is this, in manual training: How can you present it in such a way that each year you can put off the touching of the actual material further and further, and do things in your heads?

EDUCATION THRU VOCATION.

In discussing this topic Mr. Bawden considered the relation of the fundamental institutions to vocation: the home, the school, society, the church, the state, and showed how each of these reacts upon the individual in determining or influencing his choice of life work.

The vocation, having once been chosen, or having been entered by chance, exerts its influence upon the individual in various ways: (1) Social influence—the lesson of interdependence and participation, taught by the division of labor. Further, the lesson of individual responsibility; the individual attitude toward work assists in determining the collective attitude toward work. (2) As an opportunity for self-realization; vocation is the opportunity for the individual to develop skill and power by limiting himself to a comparatively narrow field of activity (Harris). (3) As a stimulus to self-realization; the ability to work with vigor, continuity, and skill, is almost the only factor determining one's position in the industrial system; hence, the incentive to effort (Fairbanks). (4) As a moral training; virtues, and the realization of their need, are developed in the pursuit of a competency. Compulsory work is a school of moral obligation. Narrow limitations may be no moral disability, if indeed they be not opportunities for a higher achievement (MacCunn). (5) The influence of one's vocation may be deadening and depressing, when the choice has been unfortunate.

EFFICIENCY IN EDUCATION.

In discussing this topic Dr. Snedden said in part: "It is the chief purpose of all of our educational gatherings in these days to discover and to promote the operation of more efficient methods of accomplishing our work. In this respect, education does not differ from many of the other agencies wherein men are feeling the impulse of a modern civilization.

"In the plane of conscious effort, it is now obvious to us that efficiency involves two conditions, namely, a clear perception of ends to be atttained and a mastery of the means by which these ends are to be realized. Education has been so long in the custom stage of development that many people are as yet impatient of any critical discussion as to purposes. It is true that any form of human activity based upon custom formulates for itself certain dogmatic ends which hold by virtue of a certain kind of faith rather than knowledge.

"Most of our education still rests on the custom level, but we are striving more and more to define our purposes in suggesting specific ways that we shall be able to control our choice of means and methods intelligently. Much of the restlessness today prevalent with regard to manual training is obviously due to the fact that in the last analysis we are only guessing as to where we are going with it. We do not know just what purpose is to be achieved, and as a consequence, we have no satisfactory standards wherewith to measure our achievements from day to day or even to determine the methods to be employed.

'For most of us efficiency involves to a certain extent the rounding out or completion of that upon which we work. A great deal of our educational effort in these days does not terminate in something of a finished product which satisfies the active learning instincts. I like in this connection to use the word "functioning." Any kind of teaching "functions" when its results are incorporating themselves into active life in some of its phases. Much of our teaching today may be compared to medicine which, when taken, produces no result, either thru the ignorance of the prescriptionist or for other causes. Human nature is apt to assert itself against either teaching or healing of this sort. In the absence of any other standards, the visible "functioning" of teaching may become a fairly good standard whereby to test its efficiency. It is for this reason that some of us would be quite willing to see manual training put on a basis of a varied productive work of the amateur's level—feeling satisfied that the results in mental and manual training will come as by-products, if a visible tangible end is achieved.

"It is well for contemporary education that so much attention is being given to the determination of the conditions of efficiency, and in so far as this quest compels us to define our purposes in such terms that we can know whether particular efforts result in their realization, it will be the better for education."

Mr. Hopkins spoke briefly of the great problem confronting those concerned with the development of the Massachusetts Normal Art School, and pointed out the need for hearty cooperation on the part of all the forces in the state that are interested in the manual arts. Large things are being planned, and an institution worthy in every way of the great state of Massachusetts is certain to result

Mr. White gave an historical sketch of the introduction of manual training into the schools of Boston, and the subsequent development of the work, and the gradual evolution in the aims and ideals on which it was based.

WESTERN DRAWING AND MANUAL TRAINING ASSOCIATION.

This Association has contracted the habit of sending out live material, and its latest bulletin is worthy of attention. The last paragraph, especially, of the following extract should certainly be suggestive to the officers of other organizations.

Never, in the history of education, has there been a time when there was so marked a stir of re-adjustment and never a time when it was so necessary to have the best efforts of all educators directed toward a constructive educational policy. Our association certainly should do some active and efficient work at this very significant moment. Since it numbers among its members many of the very strongest workers in art, household art, and industrial training, its position relative to the new vocational movement should be well considered and clearly defined.

For several years we have been concerned principally with the ways and means of teaching our own specialties and now it seems that our greater concern should be rather the evolution of the ideally balanced educational whole, and then the relative places, and importance of our particular specialties in the larger scheme.

Your program committee is at work on a most interesting plan which will present some great man who can speak on the subject of education as a whole,

a sketch of what this generation should contribute to the next; some great man who can speak in favor of the new vocational movement, and also one who is not in favor of it; the rest of the program to be devoted to the place of manual and industrial training, art and household art in any scheme of education. The various round tables will deal with developments and particulars of Manual and Vocational Training, Art and Household Art Education.

This Association does not wish to annoy anyone by sending him literature in which he is not interested. If you are not a member but would like to receive the bulletins and announcements which this Association issues from time to time, please fill out the enclosed card and mail it to the Secretary, who will place your name on his mailing list.

TEACHERS COLLEGE ALUMNI ASSOCIATION.

A large and enthusiastic meeting of alumni of Teachers College was held in New York on Friday and Saturday, February 21 and 22. Several dinners and luncheons were arranged and good fellowship generally prevailed.

On Saturday morning the section of Administration and College Teachers of Education held a conference on Vocational Guidance, with the following program: "How far is supply and demand in a community the true basis for vocational guidance as opposed to personal inclination?" Dr. E. C. Broome, and Miss Helen R. Hildreth; "The value of psychological tests in vocational guidance; relation of inclination to ability; how are inclination in person and fitness to be determined," Professor E. L. Holton, and Dr. Leonard P. Ayres; "Necessity of reorganization in existing school systems to meet the situation," Superintendent C. S. Meek, and Dr. J. K. VanDenburg.

The section of Household Arts considered the following program: "Extension work in home economics by a state college," Miss Flora Rose; "Purposes in household arts education of elementary, secondary, and collegiate grade," Professor Helen Kinne; "Recent Developments and social application of household arts education."

The sections of Fine Arts and Industrial Arts combined, and the following papers were presented: "Report of the Dresden Congress," Miss Lucia W. Dement; "Planning a Course in Industrial Arts for the First Six Grades," Miss Lois Coffey; "The Industrial Arts Program of the Seventh and Eighth Grades," Dr. E. B. Kent; "Possibilities for Fine and Industrial Arts Progress," William T. Bawden.

ILLINOIS STATE TEACHERS' ASSOCIATION.

Many addresses of interest to teachers of the manual arts were made during the meeting of this association at Peoria, December 26-28. Some phase of vocational education was discussed at each session with interest and enthusiasm. If one may judge by such a meeting, the educators of the state are giving much attention to this form of education.

On Thursday afternoon, December 26th, a preliminary round table conference was held with C. A. Prosser, of the National Society for the Promotion of Industrial Education, leading the discussion. B. E. Nelson, superintendent of schools, Racine, Wisconsin, gave an address on "Vocational Education under the

Wisconsin Law." Mr. Nelson first spoke of the common tendency to refer to Germany in the matter of vocational education. He emphasized the fact that we have a new problem in this country for our trades are not the same, and our social organization is not the same. In Racine they are trying to adopt the best from all the various plans, as they see it, using the cooperative plan as far as the industries will permit. Industrial work in the grades in Racine occupies from one-eighth to one-half of the school day, in ungraded classes one-fourth and for exceptional children one-half. Since more time has been given to industrial work, it has been found that the pupils make more rapid progress in their formal or book work. Racine has day continuation schooling for both the employed and the unemployed, with a school day from seven-thirty a. m. to five p. m. in the industrial school, and has manual training and domestic science in every school. Mr. Nelson then gave a brief history of the Wisconsin law providing for vocational education. He said that since its passage there has been no serious objection raised against it. The labor unions asked for explanation of the law but as soon as they understood it they were ready to cooperate and have done so. Following the establishment of schools according to the law, certain problems have arisen, similar to those other states are facing. The great problem is supplying teachers for industrial schools. The right kind are simply not to be had now. Mr. Nelson mentioned a possible plan; state subsidy for teachers taking training in special schools, until the pressure of demand is lessened to some degree. Another problem is the building problem; facilities cannot be provided rapidly enough to house classes that apply for industrial work. A gap in the Wisconsin law was pointed out. It makes no provision for dealing with eighth grade graduates who are not employed, but are just loafing and living at home. There should be a clause compelling this class of youths to attend either the regular or industrial schools.

In describing the industrial school work in Racine, Mr. Nelson mentioned the employment bureau which is maintained in connection with their vocation bureau, saying that it had a noticeable effect on the interest in the continuation school work. As far as possible Racine has attempted to fill the teaching positions in the school shops with big men in their respective trades. The head of the school is a normal and university trained man who held an important position in a large local industrial plant.

Mr. Prosser discussed the subject, "Problems in Administering Plans for Vocational Guidance and Training," giving many valuable suggestions in regard to framing a law in Illinois. He said such a law should provide all-day vocational schools, part-time schools, and evening schools, and that it is a good thing to have all three right at the start. Evening schools, he believes, should not be open for those under seventeen. Their office is to provide for the mature worker the next thing in the way of advancement for him. In evening schools short-time, unit courses should be given in order to be of most use to these older workers. Mr. Prosser regards the part-time school "the most democratic thing on the horizon."

In speaking of state aid Mr. Prosser said that the state should be given a reasonable degree of participation in the affairs of vocational schools which it is aiding. The local community may take the initiative but the state should be regarded as a "non-resident partner," and frequent conferences should be held

between the local authorities and the state agents during each year. The amount of aid should be large enough to serve as an inducement to establishment and to give the state some influence, but it should not be so large as to rob the local community of initiative. Close cooperation is desirable. This state aid should be safeguarded; it should be forthcoming *after results* have been approved.

After some discussion of the unit and dual systems, Mr. Prosser emphasized strongly the point that, whatever the administrative system, the executive control is the important thing. Whatever the name of the executive officer or officers they should be given a free rein. An expert should be selected, and then he should be given a chance to work out his ideas unhampered by school superintendents or others.

A number took part in the open discussion which followed Mr. Prosser's talk, and some good points were brought out. Mr. Prosser said every state as fast as conditions permit, should move toward compulsory part-time education. Again he said that the welfare of the child must first of all be considered and that industrial education must steer a straight path between the manufacturers on one hand and trades unions on the other with the goal in view—the good of the child. Mr. Joiner, Mr. Owen, and Professor Leavitt were among those who took part in the discussion.

Thursday evening at the first general session, Mr. Prosser addressed the association on the subject, "Efficient Training in the Practical Arts." The new note in education, he declared, is the vocational school of secondary grade to prepare youths over fourteen for the work they wish to pursue just as the high school prepares for universities and schools teaching professions. Mr. Prosser used a most effective figure in speaking of the changing ideals of education. The old time education was like a thru train from New York to Chicago. If a passenger wished to stop anywhere between those points he had to drop off while the train was at full speed. So the old education from the primary grades went thru to the university. In course of time one or two other stops were made and passengers could get off and follow other lines. The new education would provide many stops with branch lines, double tracks, and various privileges.

In reference to those who would have the regular high school provide vocational training Mr. Prosser said that the high school does not train for industry on the productive side, and it does not reach those who leave school at fourteen. Again it is of no use to train those in the high school vocationally for productive efficiency, when they will never go into the industries. All effective vocational education must combine doing, and thinking about the doing. Speaking of teachers for vocational work, he said that no one should be allowed to teach actual shopwork who has not had five years of actual experience in the given industry.

Mrs. Ella Flagg Young followed Mr. Prosser on the program, and in her address on "Character and Efficiency" she said that we must recognize early in the elementary school the concrete mind; that we cannot deal with this type of mind with the same methods as are used with the abstract-minded pupils. We have been too ready in the past to accept the fact that the boy has left school and gone to work.

Friday morning, in the High School Section meeting, the first two papers were devoted to vocational subjects. W. C. Bagley, of the University of Illinois, read

a very effective and forceful paper on "Vocational Training as an Educational Discipline." He discussed first the definition of terms in education, and spoke with regret of the opposition of vocational to cultural which has been so much emphasized in some quarters. There is no real opposition because vocational education is cultural, and because "education as public service has nothing to do with anything that is not practical and useful." Education as an ornamental adjunct to the individual is a thing of the past, but old notions of culture die hard. Education may be of two kinds; one sort leading to wage-earning as an end—this is narrow in its aims; the other a general kind of education which will furnish the individual with resources and will develop abilities. Therefore the choice lies not between vocational and cultural, but between the general and the specific. The fundamentals of the elementary school are truly vocational and other subjects should be added, a historical background of life should be furnished, and all should be measured by the standard of social efficiency. In secondary education a special vocational course often proves of great value to a student even if he does not follow that line as a living, because for certain types of mind such courses are more cultural than general courses. Some students get more from subjects that are in line with their dominant interest than from others. In this connection however, one should remember that interest in a vocation does not necessarily involve ability to follow that vocation.

At this point Mr. Bagley touched upon the treatment of vocational subjects in the secondary school, saying that while such courses should have a general value, great care should be taken not to lose sight of the specific aim; that the subjects should not be used merely for their general value. The specific motive must be kept first or they will lose their value to teach general lessons, affecting life and ideals. This specific motive has been lost sight of in some subjects in the past, and those subjects have, consequently, lost interest for the students, and thru that loss, have lost their power and efficiency.

Mr. Bagley pointed out the truth that the most necessary art for the child to learn is to do necessary things cheerfully. This ability to do disagreeable things cheerfully comes thru having a specific aim and is thus a valuable by-product of vocational subjects.

F. M. Giles, of DeKalb, had for his subject "The Adaptation of Faculty and Course of Study to Vocational Guidance in the High School." He emphasized the need for adaptation in every phase of high school work, the program must become flexible, old subjects must be given new life and new methods, the teachers must become alert to the new problems and willing to do extra work, such as helping in investigations, getting in touch with the industrial life of the community, and counseling with the pupils.

ILLINOIS MANUAL ARTS ASSOCIATION.

The tenth annual meeting of the Illinois Manual Arts Association was held at DeKalb February 14 and 15. The first speaker on the program Friday afternoon was Edward F. Worst, supervisor of manual training in the elementary schools of Chicago, formerly superintendent of schools in Joliet. Mr. Worst's subject, "Manual Training in Elementary Schools," was handled in a broad way.

No new plans or theories were introduced, but rather the speaker's beliefs as to manual training fundamentals were emphasized. Mr. Worst believes that manual training projests should be worked out according to the individual plans of pupils instead of by following a set model; that in the elementary grades experience should be given in handling various materials insuring a broadening of the pupils' interests and outlook; and that primary manual training should be taught by the regular teacher. He hopes "that the day never comes when primary handwork is taught by a special teacher." Manual training teachers, in any case, should always keep in close touch with the regular work. Mr. Worst emphasized the value of manual training as a means of approach to other subjects. He said manual training projects may be arranged to appeal to the different interests of each child; he may make something for the home, a footstool for instance; something for the school, as apparatus; and something for his own use. But, with all this appeal to interest each grade should have at least one problem of a very definite and accurate kind. Mr. Worst also urged sincerity in manual training work, the avoidance of shams, whether in construction or in finishes. If an article is made of pine have it finished to look like pine.

The next speaker on the program, L. L. Simpson, discussed the subject "Text Books and how to Use Them; Reference Books and How to Use Them." He first outlined the development of manual arts teaching from a chaotic, unorganized state to the present time which sees in the more progressive departments of manual training a definite, organized body of subject matter, well classified and based on authoritative texts and reference books. Then the speaker described the various kinds of books with which the manual training teacher has to deal, such as manuals, handbooks, reference books, and text-books. The text-book was defined as "a skillful presentation of just the matter desired to be given to a student for permanent retention." The growth of a text-book was described, from the teacher's collection of sketches or blueprints to the final grouping of drawings and enriched lecture material in a modern text-book.

The reasons given why manual arts teachers should use text-books in the shop will interest a larger audience than the one present at the association. They are as follows: A text-book sets a standard of quality. The text-book offers a thoro classification of material which assists both teacher and student; the teacher thru more orderly presentation and better organization, and the pupil thru added power of retention, ease in learning, and informational matter which lends perspective to the students' viewpoint. More information can be given by a text-book than is possible by lectures, and the pupil gets the matter accurately, which is seldom true of lectures. It insures uniform instruction to all pupils and classes. It is a practical time saver; text-books, and reference books as well, acquaint the student with the literature of the subject.

The Friday evening meeting was addressed, after the banquet, by George H. Miller, head of the employment department of Sears, Roebuck, and Company, of Chicago. Mr. Miller discussed "The Measurement of the School Product by Business Standards." Among many good things, he said that business men like to see and to foster as much as possible the climbing instinct in young people, the ambition to improve and work up. The qualifications desirable in employes are temperance, tact, and good judgment. He said that both business men and school

men should keep a personal record of the young people in their charge. Such a personal school record would be of great help to employers in selecting their young workers. He also said that the home and the church, more than the school, were to blame for the low standards among some of these young employes.

Professor Leavitt devoted the time for the president's address to an exposition of the Conference bill for vocational education in Illinois. Principal Giles of the De Kalb High School was called upon to describe the experiment in vocational guidance being conducted in his high school.

The Saturday morning session was devoted to discussion of experiments in vocational education recently inaugurated in the state. Clinton S. Van Deusen of Bradley Institute described the vocational work in the Institute. This work aims to give the students training in the fundamentals, a good deal of informational material as a foundation, and experience in productive work done on a commercial basis. Emery T. Filby described the vocational class at the School of Education, University of Chicago. This class is conducted on a part-time basis, experience in productive work being gained in the different fields of work found on the campus, such as the print shop of the University Press. S. J. Vaughn told of his experience with a class for retarded and delinquent boys at the Normal Training School at De Kalb. There is a good deal of flexibility about the program there, a print shop and a woodworking shop furnishing the practical experience.

At the business meeting following the program, the course of study committee was continued, and officers elected as follows: A. C. Newell, Illinois Normal University, president; M. F. Gleason, Joliet, vice-president; B. E. Gordon, La Grange, secretary-treasurer; L. W. Wahlstrom, editor. Lewis Institute, Chicago, was selected as the next place of meeting.

SCHOOL CRAFTS CLUB, NEW YORK.

The School Crafts Club held a Round Table meeting on Friday evening, February 14th. The subjects and leaders of discussion were as follows: Elementary School Subjects—"Furniture Design and Construction," Fred Thorne; "Simple Upholstery," Morris Greenberg; Supervision—"Some Principles of Supervision," Albert W. Garritt.

SHOP PROBLEMS

George A. Seaton, Editor.

At the request of the editors of the Manual Training Magazine members of the manual training faculty of The Stout Institute have contributed the following suggestions for the Shop Problems Department. While the problems are quite various, one thought predominates in all, the aim being to have each piece of work within the range of the boy's ability and worth while from the standpoint of processes involved and desirable elements of instruction made possible. Some of these problems have been adopted as regular parts of courses at the Stout Institute while others are considered as supplementary, alternate, application, or test problems.

The windmill problem is contributed by Fred L. Curran, "Printing a Monthly Paper" by Chas. E. Eslinger, "A Small Cabinet" by H. M. Hansen," "A Test Problem in Projection Drawing" by John O. Steendahl, "Wood Finishing Panels by A. W. Brown, "A Grade Carpentry Project" by Louis F. Olson, "Boiler Connections" by H. W. Jimerson, "A Thirteen-inch Brick Wall" by Wm. T. Gohn, "Andiron" by R. F. Jarvis, "Planer Jack Exercises" by F. F. Hillix, "Pattern for Return Bend" by R. H. Chandler.

It will be observed in every case that the problem selected is typical and practical rather than striking or unique.

George Fred Buxton.
The Stout Institute.

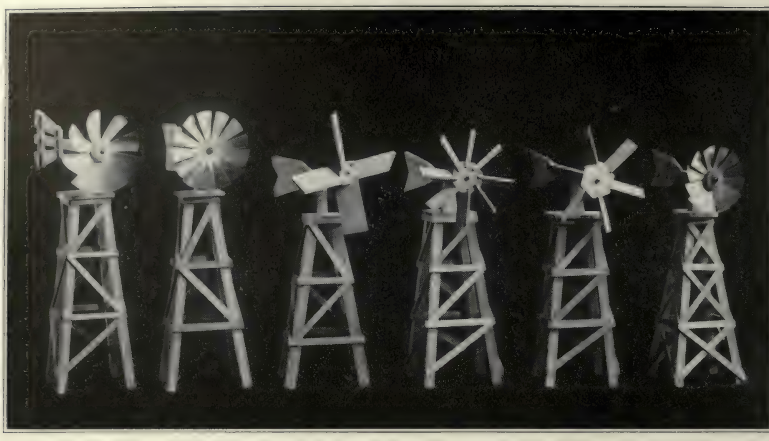
WINDMILLS.

Constructing windmills of various kinds proves an interesting line of work for fifth and sixth grade boys. The cuts show different styles of wheels and different ways of bracing the towers. These towers are made of ¾″ square stock for the posts, thin strips of wood ½″ wide for the bracing, and a piece ¼″ or ⅜″ thick for the platform. They are about 15″ high and 6″ wide at the base. Some of the wheels are made of galvanized sheet iron and some are made of wood. The diameters of the wheels vary from 6″ to 9″. Besides being interesting to the boy this work furnishes an opportunity to teach the use of the hammer, saw, try-square, rule, knife, pencil, and compass. The boy who successfully completes a problem of this kind has gained many ideas about construction and has developed some ability in executing these ideas.

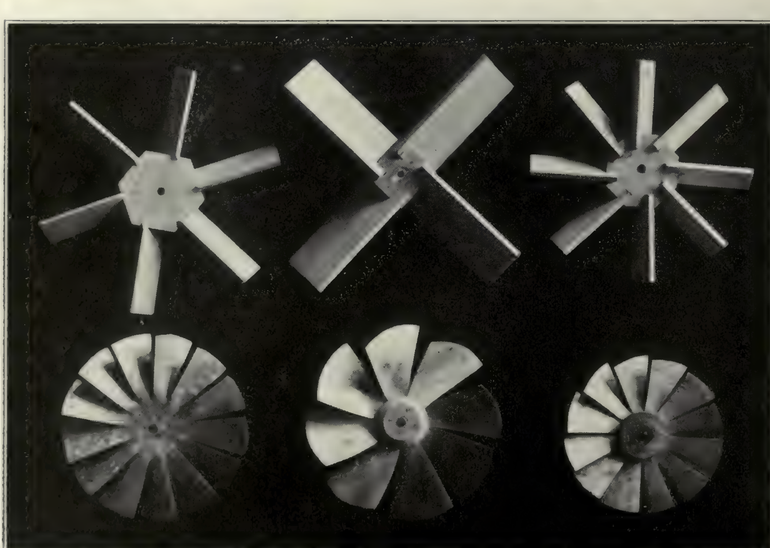
PRINTING A MONTHLY PAPER.

Instruction is given to a class of sophomore and junior high school boys in the Stout Institute print shop for an hour and a quarter each day.

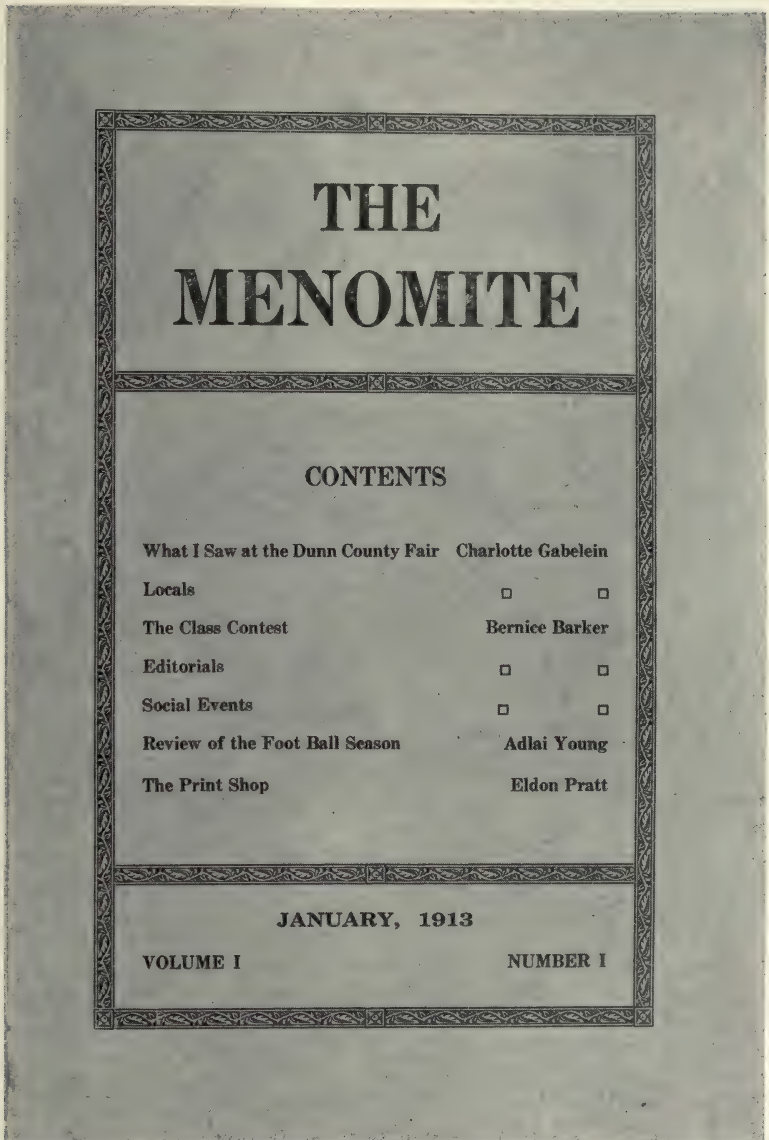
As a practical application of the work the problem of a monthly paper to be edited and printed by students suggested itself and was planned in November. A faculty committee was appointed to select a Board of Editors from the student body and assist them in starting the work. A contest was held among the stu-



GROUP OF WINDMILLS.



SAILS REMOVED FROM WINDMILLS TO SHOW CONSTRUCTION.



THE MENOMITE

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JANUARY, 1913

VOLUME I — NUMBER I

HIGH SCHOOL PAPER.

dents to select a suitable name and another among the drawing classes to design a suitable cover for the paper.

The first number of eight pages and cover of four additional pages required 125 hours' work on the part of the class combined. The type page is 24x42 ems or about 4"x7" in size. The type used for body composition is 10 point Century Expanded. There are three cover pages of advertisements.

A SMALL CABINET.

The cost of material for printing 400 copies is estimated at $4.00. The net gain from sales and from advertisements was $15.00.

The second issue of the paper, with the number of pages the same, will require only 75 hours' work because the students understand the processes and can carry them out more efficiently, and some composition as headings and advertisements in the first number will be used in the next.

A SMALL CABINET.

The small cabinet shown in the photograph is an excellent problem in cabinetmaking, involving the greatest number of different exercises or parts of cabinet construction that would be possible in a single article of furniture of such small size. It presupposes considerable preliminary training and is worked out in the following steps: *first,* sketching the finished cabinet and the details of its construction; *second,* the figuring of a complete mill bill; and *finally* the actual constructive work. A number of pieces are cut with an allowance which makes possible the cutting of a second or third joint in case the earlier efforts prove failures. An idea of the size of the cabinet shown can be obtained from the chief dimensions: length of corner posts 30½", top 19"x22".

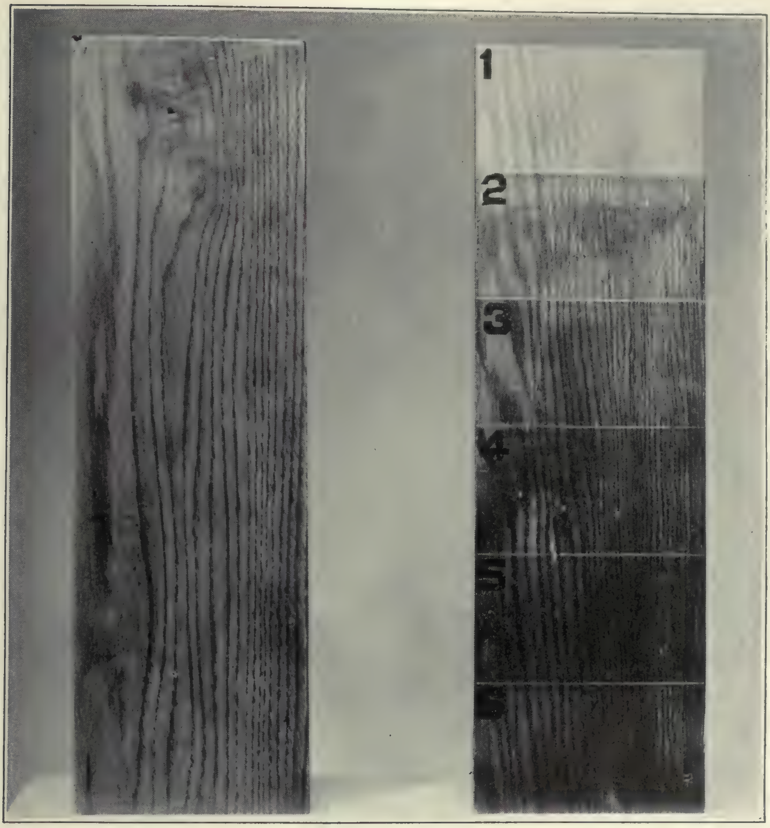
WOOD FINISHING PANELS.

The illustration shows two sides of one of the ten panels finished during the nine weeks course. Of the ten, this is the most important. The successive steps in finishing a piece of oak are numbered on the back as shown from 1 to 6. The finish is a natural color with an egg-shell gloss. The steps follow:

1. One coat of filler.
2. Filler and one coat orange shellac.
3. Filler, shellac, and one coat varnish.
4. Filler, shellac, and two coats varnish.
5. Filler, shellac, and three coats varnish.

6. Filler, shellac, varnish, and rubbing with pumice stone and oil.

The other side shows the panel completely finished following the steps named above.



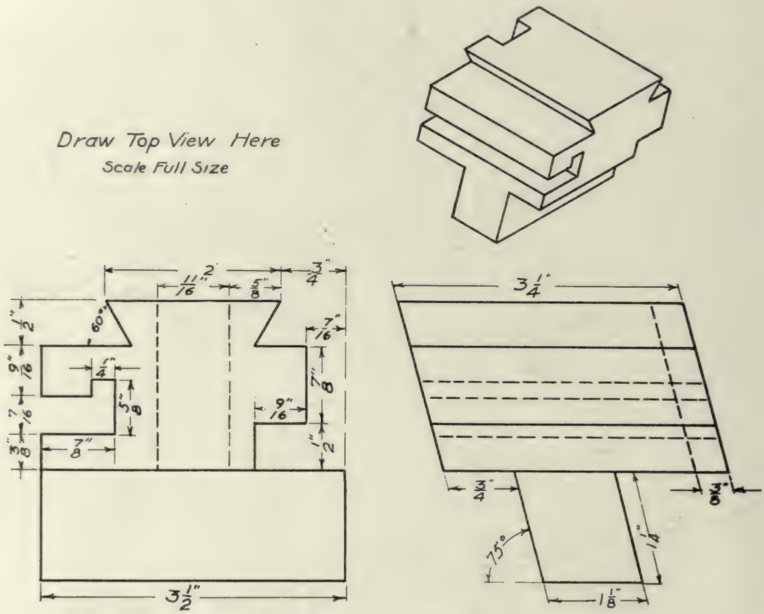
WOOD FINISHING PANELS.

TEST PROBLEM IN PROJECTION DRAWING.

This problem has been used a number of times as a test in orthographic or oblique projection. The front and profile views give all the necessary data for construction, while the isometric or pictorial view gives an idea of the shape. The problem can be made simpler by changing the oblique end planes to perpendicular or by eliminating the grooved slots.

A GRADE CARPENTRY PROJECT.

The small building shown in the accompanying drawing has been found a satisfactory problem for a seventh or eighth grade class in carpentry construction. A similar construction is illustrated in the photograph. It answers the requirements of limited space for working, it is not only typical of actual construction

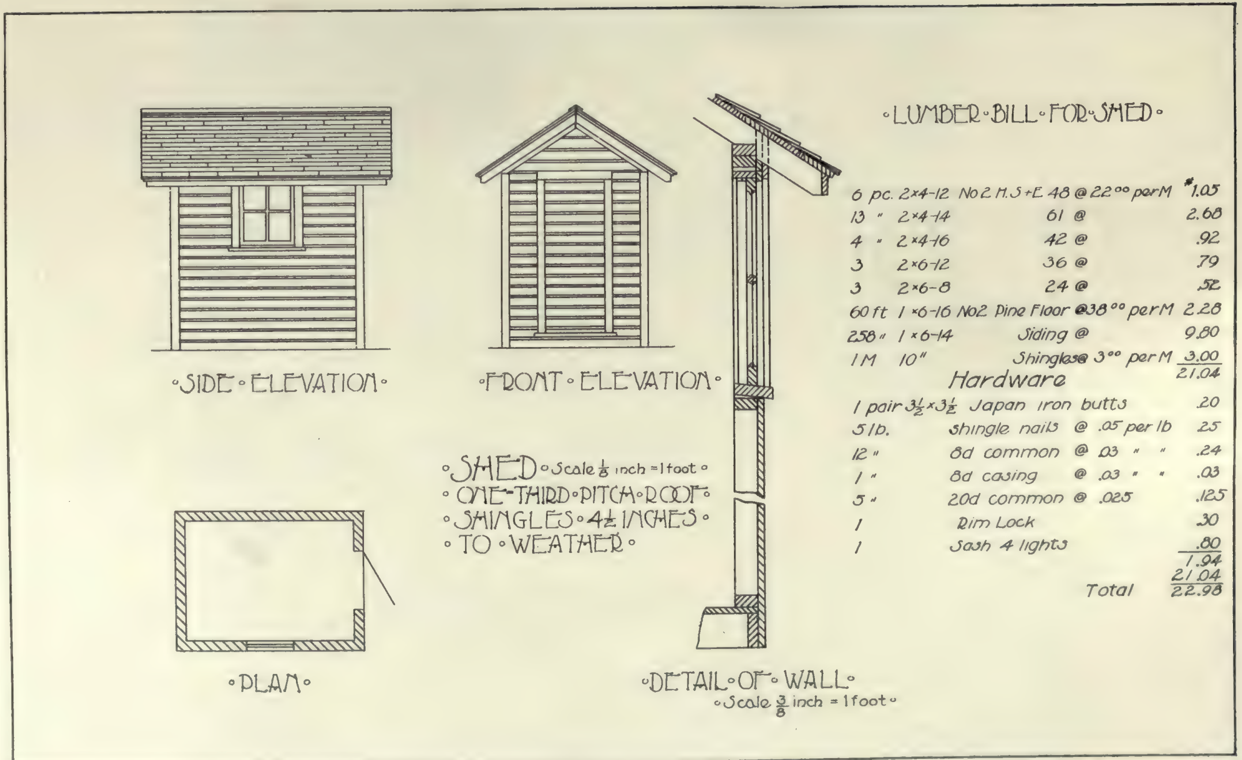


TEST PROBLEM IN PROJECTION DRAWING.

but is large enough to be a real piece of construction in itself and still it is not excessive in cost. The last consideration makes it possible to easily dispose of the building at the cost of material, for use as a wood-shed, poultry-house, tool-house, hose-house, or for a variety of other purposes. If built in the shop during the winter it may be constructed in sections and assembled outside in warm weather. The sections then should be built in place and all operations such as leveling, plumbing, and bracing, should be carried on as in outside work. It is recommended that appropriate tool exercises and constructions precede the operations on the building and that the business and mathematical phases of the problem receive due consideration by the pupils.

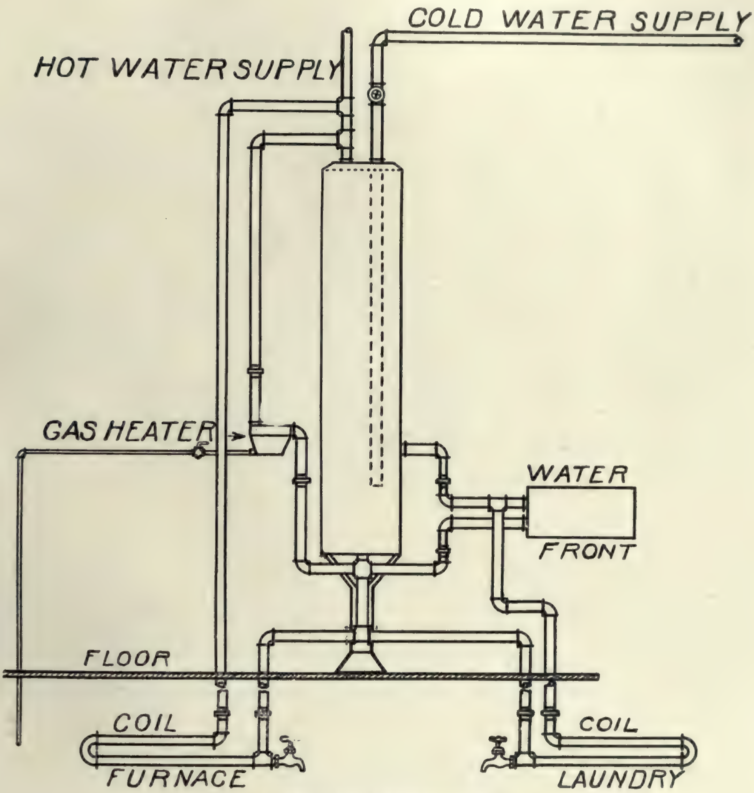
BOILER CONNECTIONS.

A range boiler with connections suitable for an exercise in a plumbing class is suggested. Four methods of heating the water are shown, say one of which will work independently of any of the other three or all four will heat in combina-


SIDE ELEVATION
FRONT ELEVATION
PLAN
SHED Scale 1/8 inch = 1 foot
ONE-THIRD PITCH ROOF
SHINGLES 4½ INCHES
TO WEATHER
DETAIL OF WALL
Scale 3/8 inch = 1 foot
LUMBER BILL FOR SHED
6 pc. 2×4-12 No 2 H.S+E 48 @ 22.00 per M $1.05
13 " 2×4-14 61 @ 2.68
4 " 2×4-16 42 @ .92
3 2×6-12 36 @ .79
3 2×6-8 24 @ .52
60 ft 1×6-16 No2 Pine Floor @ 38.00 per M 2.28
258 " 1×6-14 Siding @ 9.80
1 M 10" Shingles @ 3.00 per M 3.00
21.04
Hardware
1 pair 3½×3½ Japan iron butts .20
5 lb. shingle nails @ .05 per lb .25
12 " 8d common @ .03 " " .24
1 " 8d casing @ .03 " " .03
5 " 20d common @ .025 .125
1 Rim Lock .30
1 Sash 4 lights .80
1.94
21.04
Total 22.98

A GRADE CARPENTRY PROJECT.

tion. One connection is that between the reservoir and water front; opposite this is seen a method of attaching a gas water heater to the boiler; the two lower pipe coils represent respectively, a heating coil that may be placed in the furnace, and a coil in the firebox of a basement laundry stove or range.



A PROBLEM IN PLUMBING.

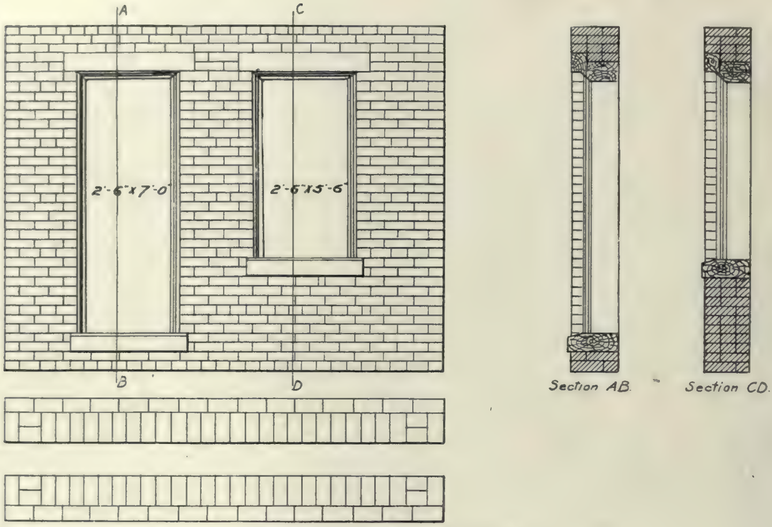
A THIRTEEN-INCH BRICK WALL.

An interesting yet practical problem for the student of bricklaying is the erection, as an exercise, of a 13″ brick wall of American bond containing a door and window frame of dimensions as shown on drawing.

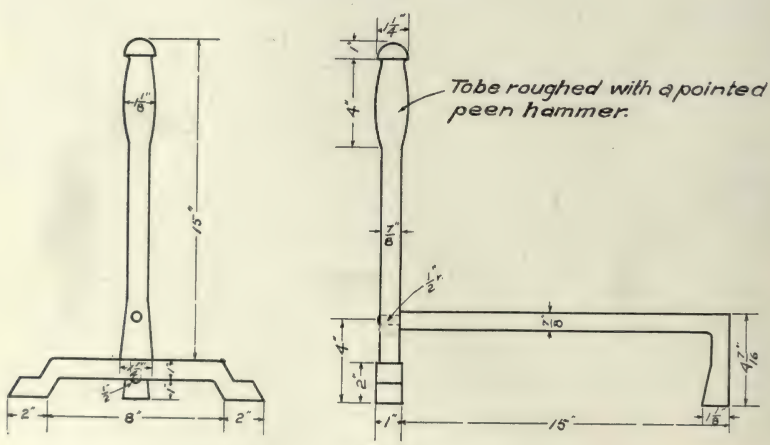
Care must be taken that the piers on either side of the door or window work a full number of brick, i. e., that no pieces of brick appear in the wall at those points. Also that the frames are set plumb to the face of the wall, yet showing the same reveal on both sides; that the sill is set level; that neither side of the frames rack to the right or left; that there shall be a full number of courses from

the bottom of sill to the top of frame, since lintels are to be used to span the openings; and that there shall be the same number of courses in each pier.

The entire exercise 10′—7½″ long and 9′—3″ high contains about 1340 brick



A THIRTEEN-INCH BRICK WALL.



ANDIRON.

which requires 3 students 4 or 5 days of 1½ hours' work. The approximate cost of such an exercise is as follows:

Brick, $9.00; mortar, $2.00; frames, $5.50; 3 students, labor (counting 5 days), 22½ hours, at 15c per hour, $3.38; total cost about $19.88.

ANDIRONS.

A drawing and a photograph make clear an andiron problem for the forge-shop, involving a desirable combination of tool exercises. The same roughed top is suitable for handles for shovel and tongs.

A PLANER JACK.

PLANER JACK.

As an application of several exercises in the machine-shop the planer jack shown in the photograph is recommended. The drawings show steps in the process of making. The work is finished by case hardening in the forge-shop, the surface having the characteristic clouded effect.

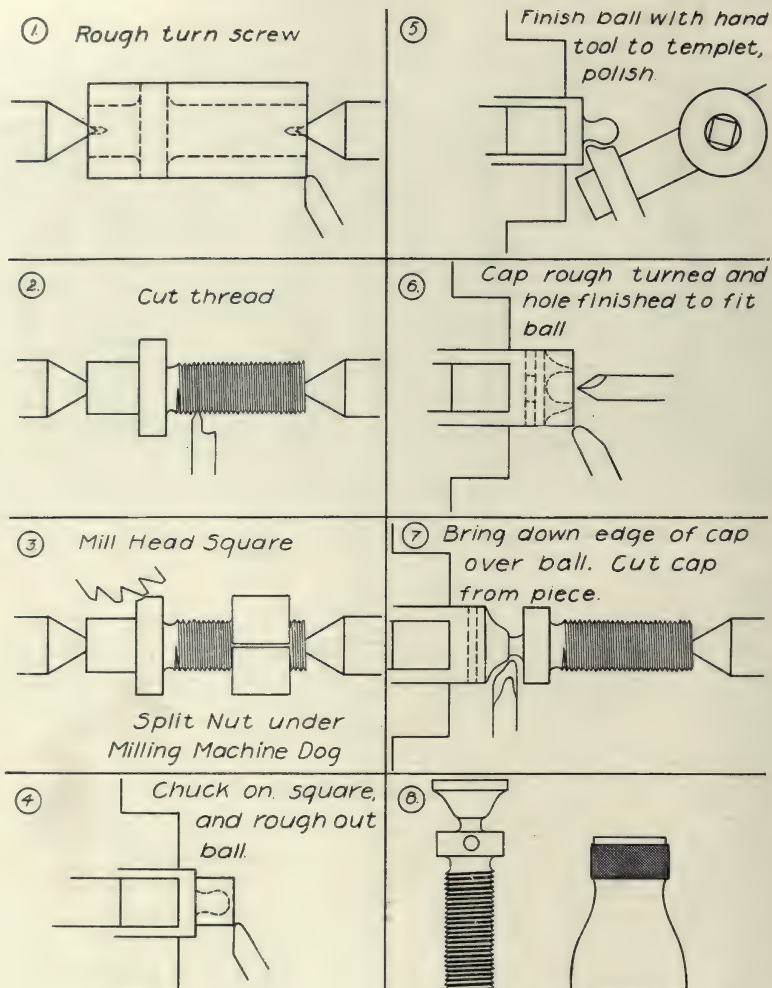
RETURN BEND AND PIPE TEE.

A 1¼″ return bend and a pipe tee are first sketched by the student, and from these sketches the patterns are made under the direction of the teacher.

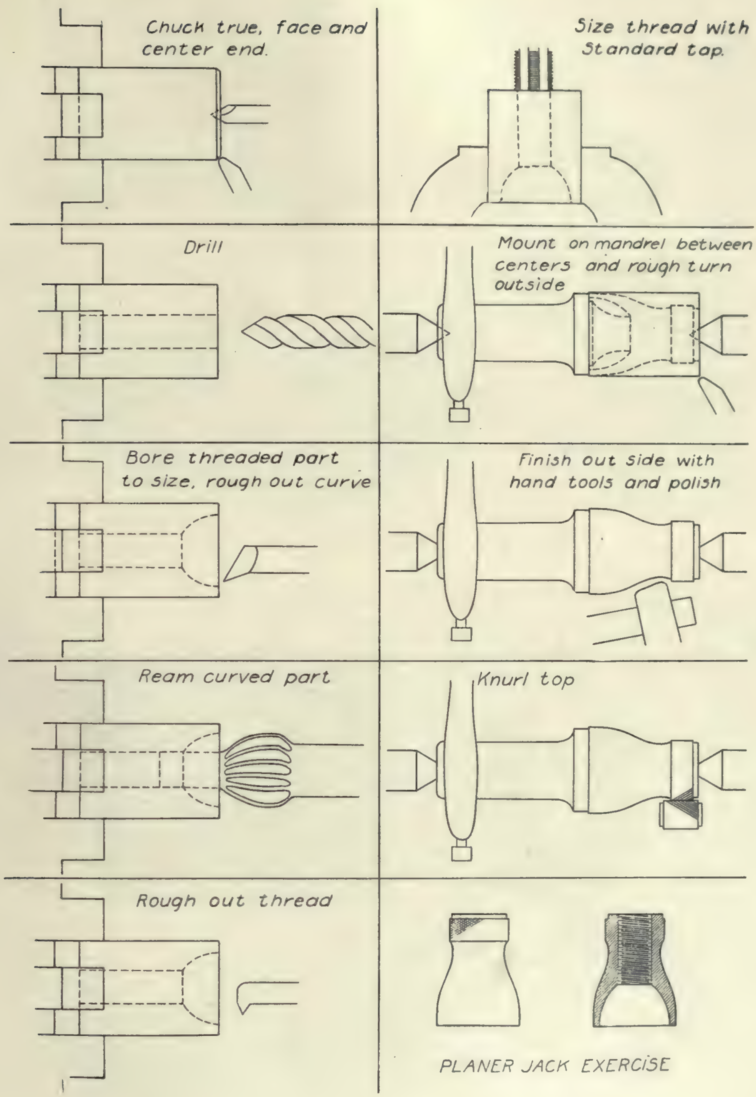
Some of the things that can be taught in making the return bend are: the making of accurate working sketches from a casting; the use of split patterns; the use of dowell pins and methods of placing the different kinds; the different ways of constructing split patterns; the use of balance cores and core prints; spindle and chuck turning and the use of the template; fitting, glueing, and nailing.

Such work can be done in any school and is the very best practical instruction possible. Projects can be chosen from pipe fitting or machinery and sketched by the student and worked out.

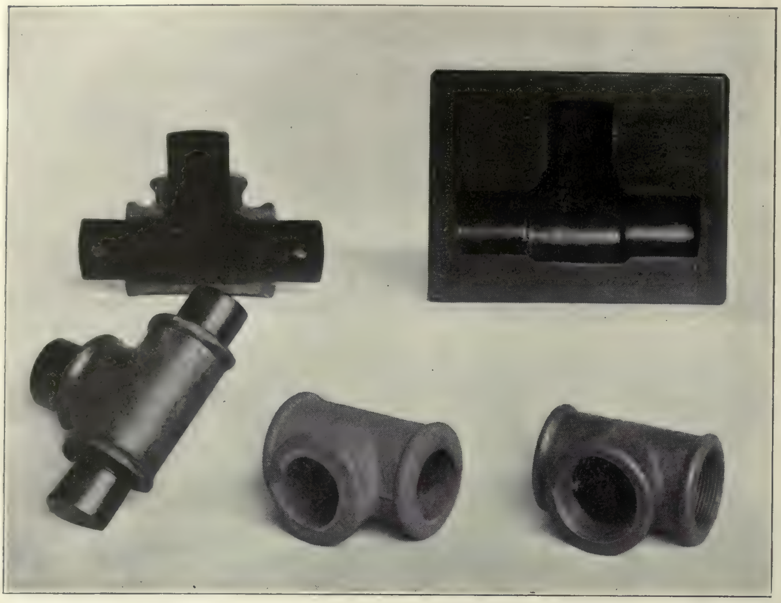
(1) A, B, and B^1 are parts which have been turned in halves and are ready to glue and nail together. (2). A sheet of paper is placed on a perfectly flat board, 1″ thick and 18″ square. (3). One-half of section A is nailed lightly on



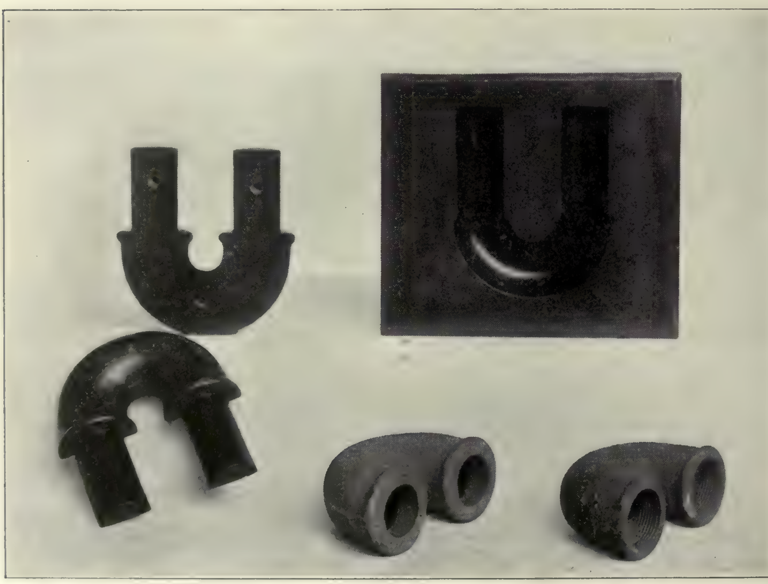
PLANER JACK EXERCISE



PLANER JACK EXERCISE



PIPE TEE.



RETURN BEND.

the board with brads, with the heads left extending up about ⅛". (4). It must be known that the paper prevents the glue which is used from fastening the board and pattern together; that the heads of the brads are left extended to enable their easy removal; that the board forms a flat surface against which to build up the pattern. (5). One-half of section B is taken, glue is applied to the part which is to be joined to A and the corresponding part of A. (6). These halves are pressed lightly together, care being used to have the edges flush with each other. (7). A small brad is driven thru A into the board to hold it in position. (8). Repeat this process with B^1. (9). When the glued parts are dry, nails must be driven thru B and B^1 into A to strengthen the glue joint. (10). The nails holding the half pattern to the board are now drawn and the paper adhering to the pattern removed by paring with a chisel. (11). The other half of section A must now be nailed lightly on the half section already glued up; each half must coincide, and paper must be placed between the halves. (12). Then the other half sections of B and B^1 must be glued and nailed in the respective positions coinciding with the halves already glued. (13). Three $\frac{5}{16}$" holes must now be bored in the center of each section of A, B, and B^1, passing thru one-half and into the other about ½". (14). The nails which hold the two halves together can now be drawn and the paper adhering to either half cleaned off. (15). Dowell pins $\frac{5}{16}$" in diameter with a rounded end, if of wood, are now placed in position and glued. (16). The pattern is now finished by sandpapering and shellacking.

ANDIRON.

CURRENT ITEMS

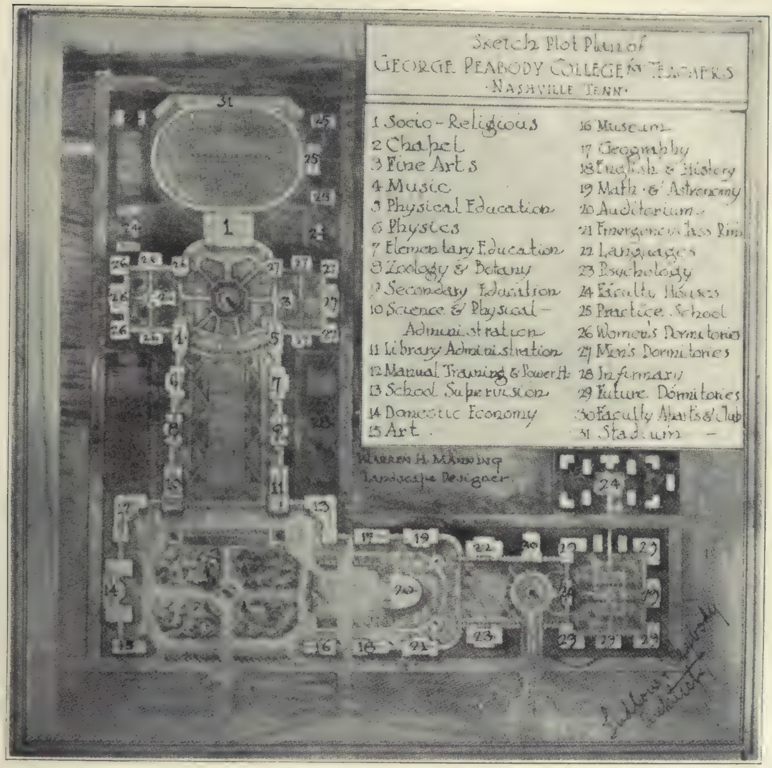
To make the high schools of still greater service to the community is the aim of recent innovations in Pittsburg. Formerly four credits a semester in academic subjects were required in nearly all courses. Twenty-four academic credits were required for graduation in any course. Hereafter the college preparatory course only will have such requirements, a minimum of twenty-six being the rule for that course. Other courses, will require at the most only three academic subjects a semester, and the household arts and industrial training courses will require only two academic subjects a semester after the first year. In order that the courses will not prove too light, a provision is made, that in order to gain credit in industrial, household, or art subjects the equivalent of five hours a week must be given each of such subjects. Those not desiring credit may devote less time if they wish to these subjects.

A new departure in the manual arts department has been arranged by the supervisor, F. H. Ball. The manual training shops at the Fifth Avenue High School are now open three evenings a week, to any boy in the city who is sixteen years old and who is approved on interview. He need not be a graduate of the grade schools, and he need not pay any tuition. The hours are from seven-thirty to nine-thirty. Students may enroll at any time. Machine shop practice, woodworking, and mechanical drawing are the subjects offered. Forging and foundry work will be added later. Twenty students in woodworking and thirty-five in mechanical drawing were reported in January, showing that this opportunity is appreciated.

An exhibit of material illustrating the recent development of education in China was on view at the educational museum of Teachers College, Columbia University, in November and December. Special interest attached to this exhibit on account of recent political and civic events in China, and because of the sixty or more Chinese students connected with Columbia University.

The exhibit showed in every department the rapid changes that have taken place since the age-long barriers have been let down to permit the introduction of western educational ideas and ideals. A recent writer has said that the present renaissance of learning is comparable only to the great revival of learning in Europe which followed the taking of Constantinople by the Turks. To teachers and students of the manual arts the most interesting part of the exhibit was that devoted to handwork. Very fine work in textiles was shown, which in its coloring and design was full of valuable suggestions for Western students. Several cases were devoted to embroidery, some of the material coming from the Girls' Professional School at Wusih, Kiangsu. Woodwork, showing real artistic ability and ingenuity, was displayed, also clay work, paper folding, box making, weaving, sewing, wooden instrument making, dyeing of wool and weaving of cloth, all showing a unique feeling for good design and artistic composition. Basket work from the School for Blind Boys was part of the exhibit.

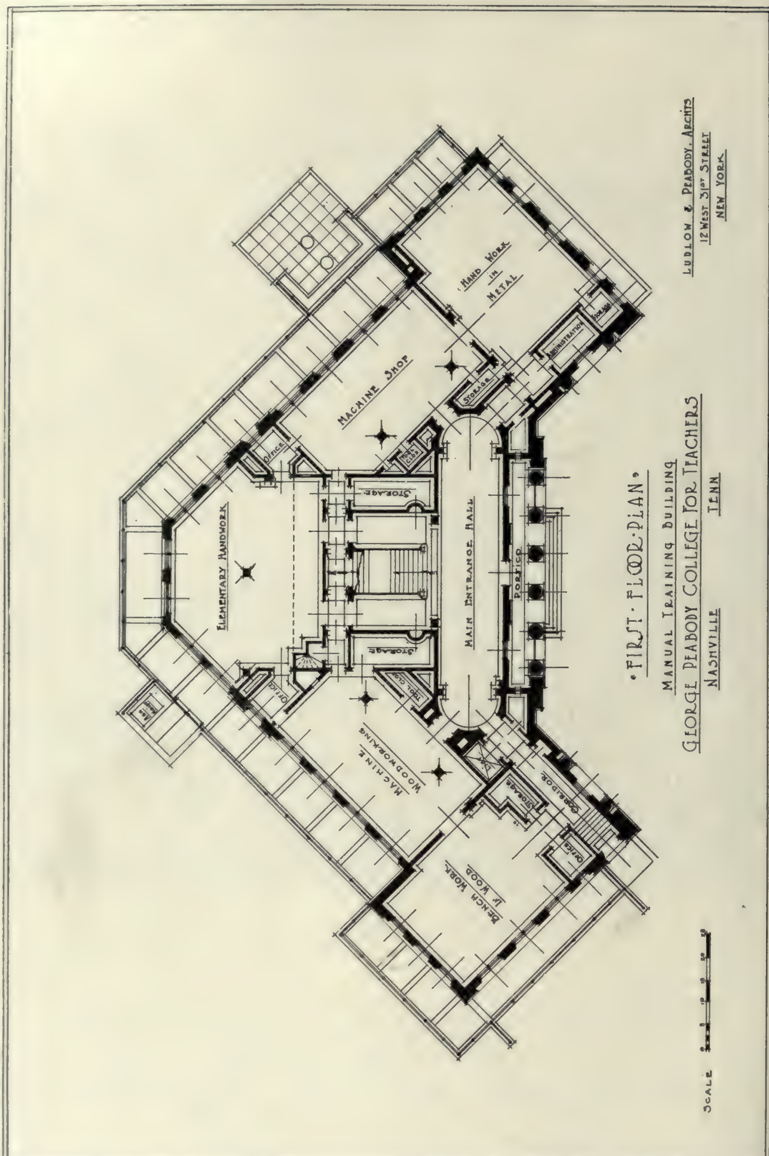
The government in China maintains professional vocational schools of various kinds, and art work has an important part in educational plans. All these things have come since 1905, showing China to be surely a progressive and energetic nation.

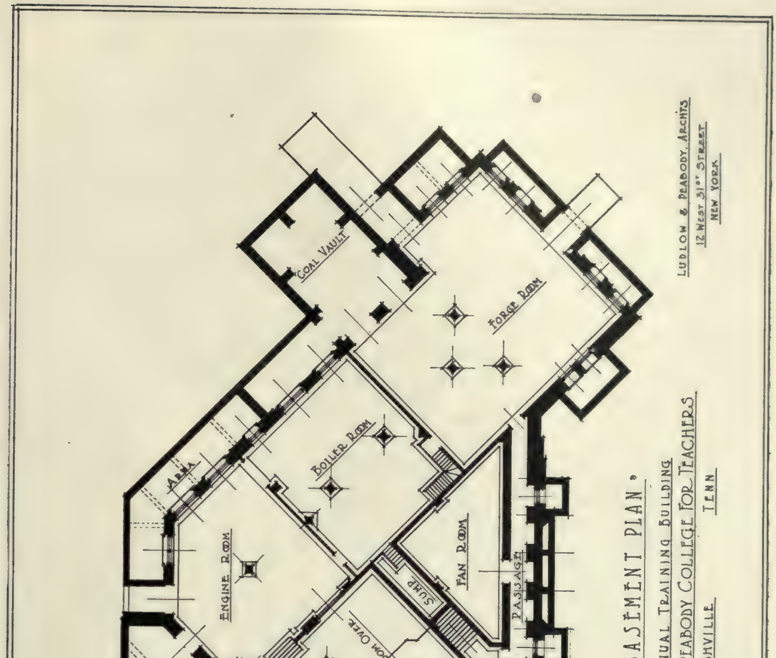


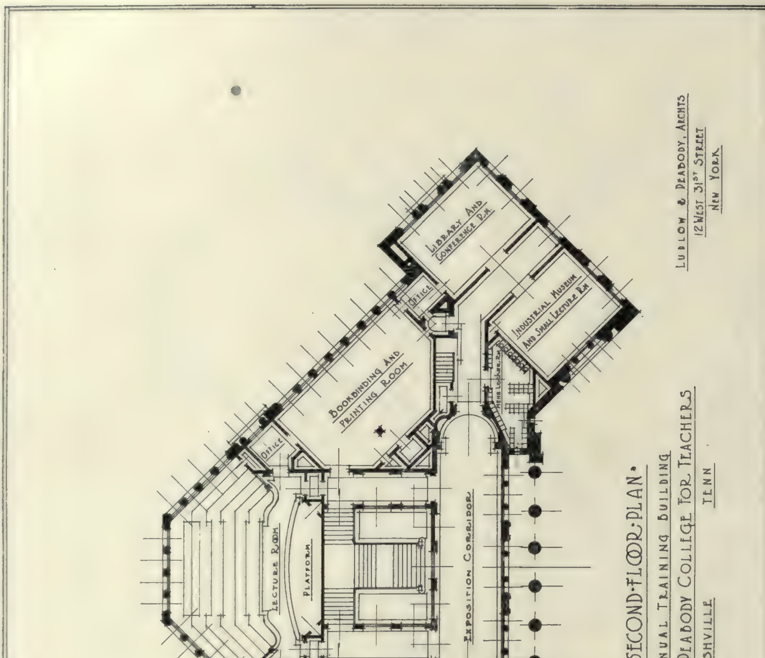
SKETCH PLAN OF GEORGE PEABODY COLLEGE FOR TEACHERS.

THE MANUAL ARTS DEPARTMENT OF GEORGE PEABODY COLLEGE FOR TEACHERS.

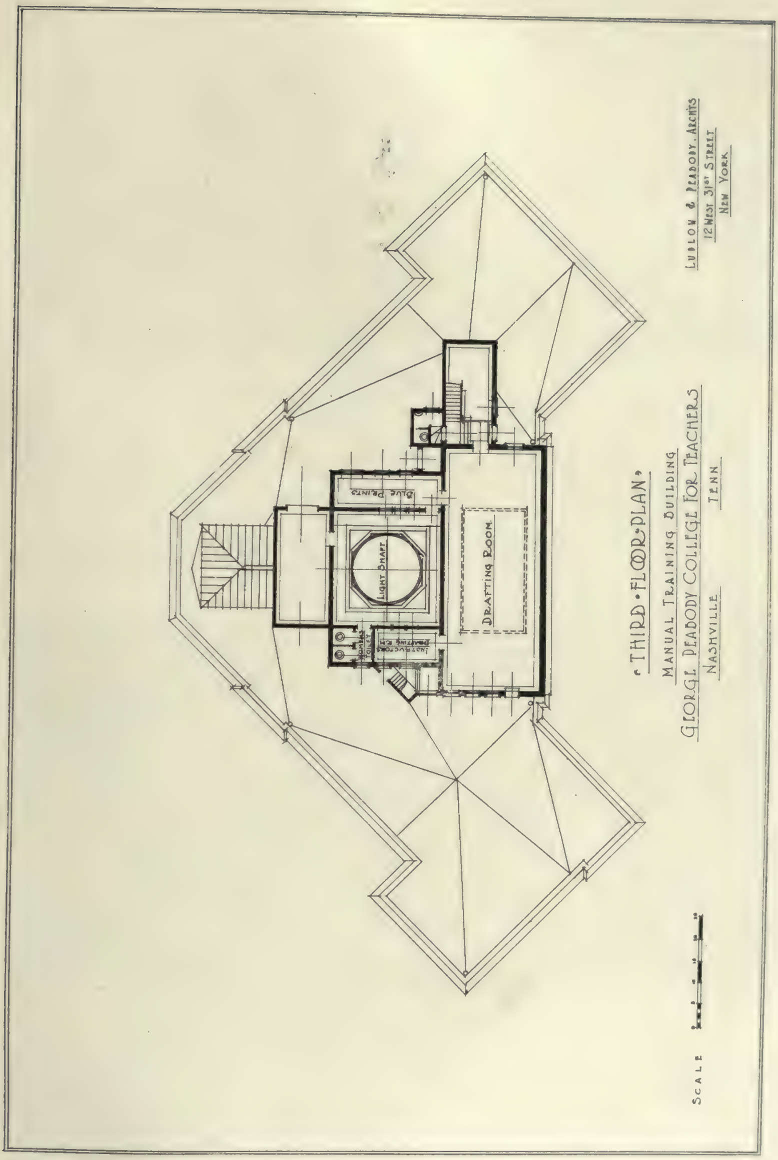
One of the most noteworthy of recent events in the educational field is the reorganization of the Peabody Normal College of Nashville, Tennessee, into the George Peabody College for Teachers, which will develop departments training leaders for normal schools, colleges and universities, training teachers of industrial education, and training superintendents of schools thru special study of elementary schools problems. In addition to this program, there has been established


LUDLOW & PEABODY. ARCHTS
12 WEST 31ST STREET
NEW YORK
HAND WORK IN METAL
MACHINE SHOP
STORAGE
ADMINISTRATION
OFFICE
ELEMENTARY HANDWORK
MAIN ENTRANCE HALL
PORTICO
MACHINE WOODWORKING
BENCH WORK IN WOOD
CORRIDOR
• FIRST · FLOOR · PLAN •
MANUAL TRAINING BUILDING
GEORGE PEABODY COLLEGE FOR TEACHERS
NASHVILLE TENN
SCALE


COAL VAULT
FORGE ROOM
BOILER ROOM
AREA
FAN ROOM
ENGINE ROOM
SUMP
PASSAGE
LOCKER ROOM OVER
APPARATUS & PUMP ROOM
AREA
FOUNDRY
AREA
"BASEMENT PLAN"
MANUAL TRAINING BUILDING
GEORGE PEABODY COLLEGE FOR TEACHERS
NASHVILLE TENN
LUDLOW & PEABODY, ARCHITS
12 WEST 31ST STREET
NEW YORK
SCALE



·SECOND·FLOOR·PLAN·
MANUAL TRAINING BUILDING
GEORGE PEABODY COLLEGE FOR TEACHERS
NASHVILLE TENN
LUDLOW & PEABODY, ARCHTS
12 WEST 31ST STREET
NEW YORK
LIBRARY AND CONFERENCE RM.
INDUSTRIAL MUSEUM AND SMALL LECTURE RM
OFFICE
BOOKBINDING AND PRINTING ROOM
OFFICE
LECTURE ROOM
PLATFORM
EXPOSITION CORRIDOR
OFFICE
CLAY ROOM
DESIGN ROOM
SCALE —



THIRD·FLOOR·PLAN
MANUAL TRAINING BUILDING
GEORGE PEABODY COLLEGE FOR TEACHERS
NASHVILLE TENN
LUDLOW & PEABODY, ARCHTS
12 WEST 31ST STREET
NEW YORK
DRAFTING ROOM
LIGHT SHAFT
BLUE PRINTS
INSTRUCTORS DRAFTING RM
WOMENS TOILET
SCALE

FRONT OF MANUAL ARTS BUILDING. ARCHTECT'S MODEL.

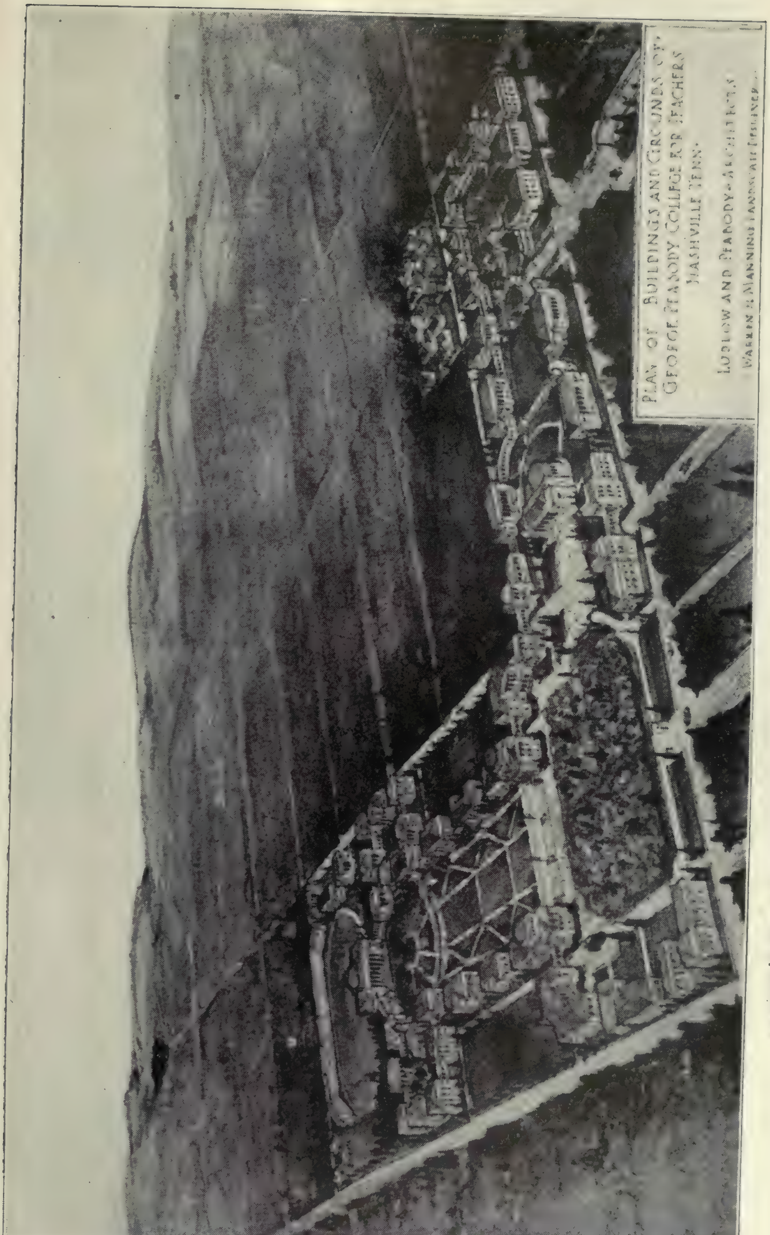
in connection with the college, the Seaman A. Knapp School of Country Life in which will be studied all phases of rural life, including agriculture, domestic economy, rural economics, household arts and design, gardening, manual arts, and rural school supervision.

The trustees of the Peabody Education Fund, who have planned this great

REAR OF MANUAL ARTS BUILDING. ARCHITECT'S MODEL.

college for the South, declare that it is "to serve as an educational crown of the systems of schools which the Southern States have established and are maintaining."

The buildings for the department of manual arts will be ready this coming September. The head of this department will be Professor Robert W. Selvidge,



AVIATOR'S VIEW OF GEORGE PEABODY COLLEGE FOR TEACHERS, NASHVILLE, TENNESSEE.

now head of the department of manual arts in the University of Missouri. Mr. Selvidge has made the following statement concerning the manual arts building and plans for the department:

"All the buildings are to be of the classic style with many details from the Southern Colonial. The shape of this particular building is determined by its position in the group. The buildings to the left of it are one story lower in level than the buildings to the right of it, so that the staircase in this building becomes the monumental interior staircase for the whole group. All of the buildings of the entire group communicate by means of colonnades, bridges or arcades so that there is a continual covered passage way from one end of the campus to the other.

"This building is to be very complete in all its appointments. It is provided with hot water, steam, gas, electric current, vacuum and compressed air. Refrigeration is also provided and the air passed thru the ventilating system may be cooled so as to reduce the temperature of the rooms for summer work. It is fireproof in construction and is so planned that it is capable of a great variety of interior arrangements. The exterior walls and the walls around the stairway are of a permanent character but nearly all of the partition walls are built of plaster blocks and may be moved and placed in other positions if desired without affecting the general structure. The different lines of activities to be carried on are indicated by the names of the rooms.

"One of the interesting features of the present plan is the idea of small sections or classes. In the hope of reaching the highest possible efficiency in instruction, it is planned to have about twelve in a section. It is believed that classes of this size are large enough to give all of the advantages to be derived from class spirit and co-operation, and still give an opportunity for adequate individual instruction.

"In order to supply the need for highly trained men in special lines it is expected that the student will choose a major in some line and pursue that work thru his entire course. In addition to this he will select a first and second minor allied to his major. By this arrangement it is hoped to secure thoroly trained men in one line with considerable working knowledge of allied occupations, instead of a smattering of several."

MANUAL TRAINING IN A KENTUCKY RURAL SCHOOL.

Growth and advancement in manual training, as in any other line of endeavor, come thru the united efforts of all the workers in the field. Most encouraging are the accounts of the introduction of the subject into rural and village schools that come from all sections of the country. The most stimulating feature of this development is that, in many cases, the new subject has come as a result of a growth from within, rather than as a response to outside suggestion or direction.

A report of such a beginning in a rural community comes from William Jayne, principal of the Fairview school, in Berks County, near Ashland, Kentucky. Mr. Jayne has been in school work for forty years. He tells the story of his recent beginning in manual training work in the following words:

"I have long since been convinced that there was too much theory and not enough that was practical in our school work. I prevailed on our county super-

intendent to present the matter to his county school board, there being no legal provision in our state for such work. After a brief hearing, they made a small appropriation of fifty dollars out of the county funds, with which to build the house for our shop. By doing considerable work myself, I put up a shop-house sixteen by twenty feet in size, which of course is small, but serves for a beginning.

MANUAL TRAINING SHOP AND EQUIPMENT IN A RURAL SCHOOL, ASHLAND, KENTUCKY.

I was convinced that the experiment was worth trying, so next I endeavored to interest some of our business men, some of whom came to my assistance and helped me to furnish the shop with an outfit of carpenters' tools costing twenty dollars. Then I appealed to the Lumber Company and they generously gave me a load of lumber. I took my own team and hauled it to the shop.

On the Monday following I took my sixth and seventh grade boys into the shop and showed them the tools and lumber, giving names, uses, and places of each. They were eager to get to work. So without a definite course marked out (for I had no books and no one to help me), we began our experiment with marking, sawing, and planing, making the simplest things I could think of, such as plant labels, flower sticks, boxes, squares, triangles, then sleds for the children, salt boxes for the kitchen, and a few picture frames. I have interested the boys in military drill, and they have made miniature guns with which we practice the

manual of arms. This is not a highly cultured community but the majority of our patrons approve, giving words of commendation if they do not contribute any money. Some, of course, openly oppose our work, and say they 'do not want our boys to fool away time with it.' "

Mr. Jayne has been encouraged by a visit from the State School Supervisor, who was enthusiastic over the beginning that had been made.

This account should go far to prove that, after all, the indifference of the community and lack of funds and facilities are not insurmountable obstacles in establishing manual training work in rural and small village schools.

NEW MANUAL TRAINING SCHOOL, ARKANSAS CITY, KANSAS.

The accompanying cut shows the exterior of a new manual training building in Arkansas City, Kansas. The building was opened for use in September. On the first floor are five rooms given over entirely to manual training and domestic arts; one room for mechanical drawing, one for woodwork, one for lathe work, one for cooking, and one for sewing. On the second and third floors are the gymnasium and six rooms for seventh and eighth grade work. All the seventh and eighth grades of the city are accomodated in this building, and are taught by the departmental system. All are required to take manual training.

The high school is only a block away and high school students who take manual training go to the manual training building for that subject. High school students are offered two years of manual training as an elective. In the building are four teachers, two men and two women, who give their entire time to the manual and domestic arts.

FOREIGN NOTES

By H. Williams Smith.

The agenda for the conference of the National Union of Teachers to be held at Easter at Weston-super-mare includes the following motions for discussion:

"That the teaching of housecraft to girls should be made compulsory."

"Housecraft as a special subject should be restricted to the last two years of the child's school life."

"That it should be an instruction from the Board of Education (National) that in all new and existing schools provision should be made for the teaching of domestic subjects."

"That this Conference is of opinion that the time has arrived when the Codal Regulations governing the grants towards the cost of manual instruction in manual training centers be abolished in order that such instruction may advance to its natural place in the school curriculum." This appears to mean that instead of a special grant, as now, for manual training, an addition should be made to the "block grant" for the whole of the school instruction.

At the North of England Education Conference Miss Cleghorn, ex-president of the National Union of Teachers, read a paper in which she recommended all the proposed items of reform detailed above. At the same Conference, Mr. C. Bird, superintendent of handcraft for Leicester, read a paper in which he pleaded that in school handwork the children should be allowed to conceive, plan, and do for themselves; that the restraints, restrictions, and coaching of the imitative method should give place to inventive, initiative and experimental method.

At the annual meeting of the National Association of Education Officers, Councillor Norman Chamberlain, M. A., in a paper on "Education and Industrial Reform" said, "On the position of hand and eye training in the day school, I will only give my personal opinion, that industrially, as well as educationally, the manual training which pervades the whole curriculum is much more valuable than the occasional use of the saw and chisel."

The Rural Education Conference recommends that Education Authorities should do all they can to encourage the gradual introduction of the manual method of teaching into rural elementary schools.

In his outline of educational reforms to be dealt with by the British government, Viscount Haldane said that the curriculum is to be broadened, particularly in the direction of increased manual and technical instruction. In commenting on this *The Daily News* says, "The Government has determined that money shall be spent to give the nation an instructed manhood as well as invincible battleships." *The Schoolmaster* accepts this proposed reform, but with the usual professional degree of over-caution.

The editor of "The Boy's Own Paper" says, "The present boy is far more educated in scientific marvels than any former generation." A publisher of boy's books says, "They (the boys) do not want so much slaughter and gold as they used to, but a live presentation of life." These be some fruits of British manual training.

One of the principal schools for the training of teachers of domestic subjects is the National Society's Training College, Berridge House, Fortune Green-road, West Hampstead, an institution which interested American visitors should endeavor to see. A course for a diploma in needlework was commenced at the college on January last.

From the report of the Education Committee of the Borough of Hornsey we cull the following: "Handicraft has become in Hornsey to a large extent a "method" of instruction rather than a "subject," and the results in added interest and practicability to nearly all the other subjects of the curriculum are apparent. * * * * It is more difficult in the case of domestic subjects than in the case of handicraft to see exactly how the teaching can be co-ordinated with that of many of the other subjects, but there is no doubt that this could be done to a greater extent than at present."

At a recent London County Council Conference Mr. W. F. Fowler said, "Much of the handwork should be done at home. Often, if left to himself, the boy would fashion his own tools out of materials which to the craftsman seemed impossible. The order in which educational handwork should be introduced was (1) drawing and plastics; (2) paper and materials of similar flexibility; (3) stouter paper, thin cord, and other materials of similar rigidity; (4) stouter cardboard; (5) prepared wood; (6) wood; (7) metal."

At a Shadwell (London) school little pupils learn how to make babies' clothes. In the preliminary stages they are taught to make bonnets and clothes to fit their dolls; afterwards they learn to fashion them for real babies, and eventually wind up with fullgrown dressmaking and millinery.

The manual training teachers of London have long been agitating for higher salaries, and, in the opinion of *The London Teacher,* they "are, we believe, within measurable distance of a successful issue to their agitation."

The London Education Committee has agreed experimentally to adapt seven art or science rooms in ordinary schools into practical workrooms. They will be furnished with movable tables and seats. The instruction will be in various kinds of handwork and measurements, as distinct from ordinary woodwork. Each class in the school will occupy the room in turn for instruction.

A certain school in a poor part of North Kensington (Kensington, where a palace is, mark you!) is attended by children who live under conditions which effectually prevent physical, intellectual, or moral development (God save us!) and it is felt, says *The Times,* by the London Education Authorities that the great function of the school must be to give the children an interest in life, if they are ever to become useful citizens. It has therefore been decided to introduce much more manual work into the curriculum. If, too, much more food could be introduced into the stomachs, and much more joy into the lives of the North Kensingtonians we should be getting on.

Lincolnshire, being an extra lage county, is divided into Kesteven and Lindsey, even as Yorkshire is divided into "Ridings." Some three years ago the Lindsey Education Committee introduced the teaching of practical subjects as an experiment into 25 elementary schools in rural districts; it didn't cost Lindsey too much, and the results were so successful that there are now in Lindsey seventy schools

of all sizes in which handicrafts are taught on three afternoons in the week, the subjects being dealt with educationally and not vocationally. Now the county of Nottingham has caught the infection from Lindsey, and has drawn up a list of twenty-five of their schools for similar treatment. We should like to hear the comments of those schools which are not going to be treated yet.

At Bradford, Yorks, the number of domestic centres is 52, viz: 28 cookery, 18 laundry, and 6 housewifery. The work is carried on by a staff of 26 specially trained teachers. Two centres to a teacher seems out of proportion somewhat. Be that as it may, girls from 80 schools attend cookery; from 64 laundry; and from 55 housewifery. Provision is made for the blind, deaf, and mentally defective pupils. Bradford may be said to be doing well, in this respect, for its 300,000 inhabitants.

Where there's a will there's a way. At Market Bosworth in Leicestershire a cookery class is taught successfully by the wife of the head master in the kitchen of her own house, for which inexpensive fittings have been provided by the committee.

A new use for Boy Scouts has been found at Falding, Kent, where the Parish Council has appointed the local troop official firefighters to the village, and has supplied the outfit, including an engine. As exponents of good manual and moral training the Scouts are "it."

Monmouthshire has more than a hundred boys school-gardening in the country. Mr. Runciman, President of the Board of Agriculture and a Cabinet Minister, expressed astonishment at the giant cabbages, leeks and fruits raised by the schoolboys. It is easily possible to astonish even Cabinet Ministers when manual training gets into the stride.

St. Paul's School, Deansgate, Bolton, recently held an exhibition of school handwork. There were models of Indian encampments; Esquimaux villages concocted with salt and plasterine; Vesuvious in eruption—a fearsome spectacle; a Canadian settler's home; and Biblical scenes. These, and many other things too numerous to mention, gave great satisfaction to the good people of Bolton.

Miss Hughes of the Glamorganshire Education Committee advocates the widening of the curriculum by teaching girls woodworking and even bootmending. We find curriculums very elastic things when we begin to stretch them.

A travelling dairy school which visits all parts of the county, staying for two or three weeks at each centre, is a feature of educational work in Cornwall. About twenty children from the local schools attend at each place visited.

The Educational News has presented us with a portrait group of the first diploma winners of the course in educational handwork conducted at the Edinburgh Provincial Training College; canny-lookin', braw lads, every one of 'em. Congratulations to each and all!

Mr. Carmichael, Minister of Public Instruction, has appointed a special teacher to visit England and the Continent to investigate systems of manual training, with the object of elaborating a co-ordinated scheme for the New South Wales public schools.

Reports by Inspectors Morrison and Young on manual training in the Province of the Cape of Good Hope chronicle steady progress. A kindergarten exhibition held at Cape Town comprised models illustrating fishing, ostrich and sheep farming, etc. The official comment sounded a warning note that the models should be considered as means, not ends. The models were really too good; that was what was the matter. We all realize such a danger. Blanco Public school, "notwithstanding difficulties in regard to the water supply," (a South African touch, this) pleases every beholder with its nice school garden.

From September 2nd to 13th, 1912, a *Spring* School for teachers was held at Masterton, New Zealand, giving courses in nature study, elementary agriculture and handwork to twenty rural teachers under the principalship of Mr. C. A. Cumming, assisted by Messrs. Howe and Grant, two ex-London instructors, who have transplanted themselves in the Antipodes. The school where the courses were given is admirably equipped in every way, having in addition to the usual classrooms, a science room, cookery room, woodwork room, a well-appointed museum, school garden, and a spacious assembly hall. The time table was arranged as follows:—9:15 to 10:45 and 1:15 to 2:45, lectures, laboratory or microscopic work. 11 to 12 and 3 to 4 (more often to 5 or 5:30) woodwork, including pegwork and stripwood work. The woodwork was entered into with zest by both men and women, the latter confining themselves chiefly to the strip and peg work. This peg work is the utilisation of clothes pegs as materials for the construction of miniature chairs, tables, bedsteads, etc., and so far as we know, has been originated in New Zealand by Mr. Howe. Teachers of both sexes constructed apparatus necessary to illustrate their day-by-day teaching, and such matters as tools, general equipment, materials and prices of same were dealt with.

CRAFTS LAMP MADE AT SCOTDALE, PA. HIGH SCHOOL. BASE MAHOGANY, SHADE COPPER AND ART GLASS. ALLEN D. BACKUS, DIRECTOR OF MANUAL TRAINING.

REVIEWS

Educational Aims and Efforts 1880-1910. By Sir Philip Magnus, Longmans, Green, and Company, 6 by 9¼ inches, pp. 228; price $2.25, net.

The author of this book, for many years director of the City and Guilds of London Institute, is one of the most prominent English educators of our time. Thruout his career, Sir Philip Magnus has been an earnest advocate of manual training, and to his efforts must be given the credit for much of the advancement made in English education, especially in the direction of technical and hand training.

We have in this volume a record of this progress and of the author's experiences in the development of the newer aims and ideals in education, together with a selection of such of his addresses as are of continued and renewed interest in connection with the changes taking place in education the world over.

The chapters which will prove most interesting to teachers of the manual arts are the first two, "Progress in Elementary Education," and "Some Problems in Secondary Education;" and "The Technical Instruction Movement;" "Manual Training in Schools: Its Origin and Purpose;" "Handwork and Headwork: A Forecast;" "Handwork in School Life: Domestic Subjects;" "Manual Training in Relation to Health," and "The Training of Industrial Artists."

The address on manual training was delivered on the occasion of the author's becoming president of the National Association of Manual Training Teachers in 1894. "Handwork and Headwork" was given as his last address as president of that association, in 1903. In these two papers there is shown a keen insight, a grasp of pedagogic principles, and an understanding of the practical problems of life that make the author's conclusions of inestimable value to the teaching body of any and all countries. American educators who are puzzling over the problems of reorganization incident to the demand for vocational training will find in these chapters the answers to many of such questions, made by a man who has kept his finger on the pulse of European educational life for many years and has foreseen many of these very difficulties, which many seem to consider purely local and necessarily new. The following sentences which conclude the first chapter of this book have found an echo in many American magazines of the current year:

"After forty years experience, we can arrive at no other conclusion than that our system of elementary education must be modified. To the altered conditions that have rendered necessary this change, reference is made later on. But there can no longer be any doubt that elementary instruction must be based on practical work, and must have an experimental rather than a literary bias. Education, to be effective, must have regard also to the *mileau* in which the child lives, and one of its objects should be to utilize the influences of surroundings where they are helpful, and to correct them where they seem likely to prove harmful to the healthy growth of character."

Some readers of this book may disagree with the author's phychology and pedagogy but there will be none, we believe, who will fail to gain from it a tonic sense of the broad relations of his work to the larger field of general education and to the world as a whole.

Forge Work. By William L. Ilgen, forging instructor, Crane Technical High School, Chicago. American Book Co. Cincinnati, 1912. 7¼x5 inches; 210 pages; price, 80 cents, net.

Although this book contains drawings of a few exercise pieces, it is not a course in forging, but a textbook on forging processes, methods, principles and materials, with ten pages of formulas and convenient tables added at the end. It is a textbook to supplement any teacher's individual course of problems, or such a course as he may select in printed form. In this respect it is in full harmony with the best recent thought on textbooks for the manual arts—a valuable source of information for the pupil, a convenience and stimulus to any teacher, and a step toward bringing about a definite standard of subject matter.

The book is well written; it appears to be comprehensive enough without attempting to be exhaustive; it tells the vital facts and illustrates many of them with drawings well suited to the purpose. The line drawings illustrating processes are especially satisfactory. In fact, the book would seem to set a new standard among texts on forging.

Inside Finishing. By Charles A. King, director of manual training, Eastern High School, Bay City, Mich. American Book Co., Cincinnati, 1912. 7¼x5 in.; 227 pages; price, 80 cents, net.

Anyone acquainted with the books of the "King's Series on Woodwork and Carpentry" will welcome this one. In style and quality it is uniform with the others. The scope of the book is unique. The first chapter is on heating, ventilation and refrigeration. Then follow chapters on floor laying, doors, window frames and sash, stair building, painting, hardware, estimating, and arithmetic.

Just what the field of this book may be is, perhaps, not fully determined, but it certainly contains much subject matter that should come before advanced high school, normal school and trade school students in architectural drawing and carpentry. The problems in arithmetic will serve as an additional reason for using this book in some classes.

Composition, By Arthur Wesley Dow, Doubleday, Page, and Company, 9¼x11¼ inches, pp. 128; price $4.00 net.

This book has long been a standard textbook on art, the first edition having been published in 1899. This 1912 edition is a fine piece of bookmaking, the form being well suited to the subject-matter. It contains a wealth of new illustrations consisting of line drawings, halftones, and color plates. The latter, printed on greyed paper, are very choice examples of color-harmony, rich, clear, and satisfying.

The subject-matter of the book is familiar to many students and teachers of art who have had the privilege of working under Professor Dow. It presents his theory of the synthetic method of art teaching—the approach to beauty thru the study of the three elements, line, notan, and color. He considers composition or the building up of harmony, the fundamental process in all the fine arts. The history of the way in which the author came to his beliefs and his experience in working out the new method are told in the first chapter. Then follow discussions of the creation of harmony by the use of the three elements. So-called repre-

sentative drawing is made secondary to design, in Mr. Dow's method, the student drawing from nature only that he may have material to combine and arrange in a good composition. The understanding of the principles of space art precedes representative drawing. This, it is at once apparent, is a reversal of the old established order of art teaching, which would have the student draw from nature for the sake of the drawing, the skill in reproduction, the representation being the end in itself.

Teachers of the manual arts are mainly interested in art from the design standpoint. There is a growing demand that things made in manual training shops shall show good proportion, fine line, and harmony with their ultimate surroundings. This book, then, which emphasizes these very points, is especially commended to manual arts teachers, teachers who wish to appreciate really good design and who wish to teach their pupils to appreciate it.

In his conclusion Professor Dow says: "The intention has been to reveal the sources of power; to show the student how to look within for the greatest help; to teach him not to depend on externals, not to lean too much on anything or anybody." Again he says: "Anything in art is possible when freedom is given to the divine gift appreciation." —V. E. W.

Educational Handwork, By T. B. Kidner, The Educational Book Company, Limited, Toronto, 6 by 7½ inches, pp. 200.

The author of this book, at the time of its publication, was director of manual training for the province of New Brunswick, in Canada. He is now occupying the position of director of technical schools in Calgary, Alberta. The work presented in this volume has been tested in the schoolroom. It comprises paper-folding, paper cutting and mounting, patternwork and designing with colored papers, constructive work in paper, cardboard cutting and modeling, raffia work, clay work, basketry, and the construction of geometry models.

The models and lessons are arranged in "stages" in a course of study which will be of help in arranging an outline for handwork. Much of the material is suitable for work in rural schools as well as elementary grades in city schools.

While few of the models will be new to teachers in the United States, helpful suggestions may be found in methods and arrangement of lessons. The book is well illustrated and is printed in large, pleasing type. —V. E. W.

RECEIVED.

Proceedings, Eastern Art and Manual Training Teachers' Association. Third Annual Report, Baltimore, May 14-16, 1912. Secretary-Treasurer, T. R. Coggeshall, Girard College, Philadelphia.

Elementary Woodworking. By William Noyes. A syllabus of a course published by Teachers College, Columbia University. Illustrated with perspectives and working drawings. Price 30 cents.

Guarding the Public Health, The Community Institute, The Social Serivce Institute in Milwaukee. Bulletins of the University of Wisconsin, Extension Division.

The Teaching of Modern Languages in the United States. By Charles Hart Handschin, Miami University, Government Printing Office, Washington, D. C. This is Number 3 of the 1913 bulletins sent out by the Bureau of Education.

Annual Report of School Committee, City of Boston, 1912. This valuable report contains 116 pages and is illustrated.

Bibliography of Exceptional Children and Their Education. By Arthur MacDonald, Government Printing Office, Washington, D. C. Bulletin number 32, series of 1912, of the Bureau of Education.

Bibliography of Child Study for the Years 1910-1911. Compiled by Clark University Library. Published by the Government Printing Office, Washington, D. C. Issued by the Bureau of Education as Bulletin number 26, 1912.

Bibliography of the Teaching of Mathematics. By David E. Smith and Charles Goldziher. Bulletin number 29, 1912, Bureau of Education. Printed by Government Printing Office, Washington, D. C.

Wisconsin Memorial Day Annual 1913. Compiled by O. S. Rice, State Library Clerk. Issued by C. P. Cary, State Superintendent. Illustrated. Contains 88 pages of addresses, essays and patriotic poems.

Report on Evening Schools for Year Ending July 31, 1912. By City Superintendent of Schools of New York City. Contains interesting diagrams, statistics, and illustrations, in 143 pages.

The Minnesota State Art Society Annual Report, 1912. Describes various activities of the society thruout the State, such as exhibits, lectures and classes.

Board of Education, Kansas City, Missouri, Annual Report. Includes the annual report of Superintendent J. M. Greenwood, and reports of officers of the board. Contains 343 pages and is well illustrated.

New Britain, Connecticut, Public Schools, Annual Report, 1912-1913. Contains 135 pages and includes reports of the Superintendent S. J. Holmes, the Principal of the High School, and other school officers.

Annual Report, Board of Education, Bayonne, New Jersey, 1911-1912. In addition to Superintendent Carr's report it contains interesting data regarding the Bayonne Vocational School, and the work of special departments.

The Twelfth Yearbook of the National Society for the Study of Education. Part I. The Supervision of City Schools. Part II. The Supervision of Rural Schools. Published by the University of Chicago Press, in two volumes.

Training Courses for Rural Teachers. By A. C. Monahan and Robert H. Wright. United States Bureau of Education, Bulletin No. 2, 1913. Government Printing Office, Washington, D. C.

The One-Room and Village Schools in Illinois. By Francis G. Blair, State Superintendent of Public Instruction, Springfield, Ill. This presents facts, ideals and suggestions for the betterment of the rural schools. It is an illustrated circular of 105 pages.

FIELD NOTES

In the Boston manual training shops all pupils are expected to give part of their time to productive work for the schools. This kind of work is handled, as far as possible, on an industrial basis.

Mechanics Institute, Rochester, New York, conducted its first summer session this last season. Courses were offered in manual training, domestic science, domestic art, applied art, pedagogy, and academic work.

R. S. Brace has been appointed to the principalship of the C. M. Schwab Industrial School in Homestead, near Pittsburg, Pennsylvania. Mr. Brace goes to Homestead from Scottdale, Pennsylvania, where he has been director of manual training.

Leroy P. Eliot is supervising manual training in Perth Amboy, New Jersey. Mr. Eliot came to Perth Amboy from a similar position in Iowa City, Iowa.

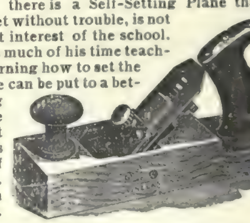
State Superintendent J. D. Eggleston, of Virginia, before meetings of teachers in the state, is urging the importance of manual training and domestic science in the schools. He would like to see such departments placed in every school in the state, even the one-roomed schools.

Ralph F. Kinter is the new supervisor of manual training in Braddock, Pennsylvania. Mr. Kinter, who is a graduate of the teachers' course at Carnegie Institute, was an instructor in manual training in one of the Pittsburg schools. The work in Braddock extends thru the 6th, 7th, 8th grades and the high school. The high school mechanical drawing is in charge of Miss Eileen Knox.

E. R. Tompkins is teaching manual training at the Milwaukee Normal School. Mr. Tompkins, who is a graduate of Bradley Institute, went to Milwaukee from a position as director of manual training in the high school at Grand Forks, North Dakota.

Manual training and domestic science are new features of the Oakmont, Pennsylvania, schools. B. A. Beinlich is the is the instructor.

(Continued on p. XVII)



FIELD NOTES

(Continued from p. XIII)

Lawrence Page teaches the new manual training classes at Grass Valley, California.

Miss M. Louise McCormick, of Pittsburg, Kansas, has just been elected to teach domestic science at Kerville, Texas.

Walter L. Brown has charge of the manual training work introduced this fall at Foxcroft Academy, in Maine. Thirty-five students have elected the subject.

William S. Arnold is the new teacher of manual training at Bangor, Maine.

Windom, Minnesota, added manual training to the course of study last year. This fall, agriculture and domestic science were established in the schools.

Manual training facilities have been provided for the eighth grade and high school in Canton, Massachusetts.

A. Flagler is the new director of the manual arts department of the schools of West Allis, Wisconsin.

Manual training is now taught in all grades of the schools of Dillon, South Carolina.

The manual training department at Corning, New York, has three new rooms and new equipment for wood-turning. The three rooms are connected by archways.

While the average attendance in the elementary grades of New York City has increased 41.8 per cent in the past ten years, the number completing the course in the elementary school has increased 142.3 per cent. These figures prove, believes Superintendent Maxwell, that the effort to recognize and consider individuality in children has been very much worth while. More industrial training is urged by Superintendent Maxwell as a means of keeping the pupils in school longer still.

Miss Ruth Stebbins is a new instructor in the Manual Training High School at Indianapolis.

(Continued on p. XVII)

72 YEARS OF DISSTON CONTROL

In these times when new firms are born every year and old ones are changing from one control to another; when many are endeavoring to *build* reputations by clever advertising, it is significant to learn of a firm with a record such as that of Henry Disston & Sons.

Aside from those sentimental feelings that naturally attach to it is the importance of this record to the users of DISSTON goods. It conveys the assurance that DISSTON Saws, Tools and Files are made today in the same thorough manner as for nearly four-score years, and that the efforts expended to *build* the high reputation achieved are still being made to maintain and enhance it.

When the statement is made that the ownership, operation, and management of Henry Disston & Sons has not left the DISSTON family since the foundation of the business in 1840, it presents the products of this firm in a new light.

A man starting with the high ideals that Henry Disston did must surely impress his personality upon his sons and grandsons, and while they continue to manage and extend the business, as they are doing today, the same high aims and broad policies that were his will never cease to pervade the entire organization.

No man knew better the value of a reputation and he strove to establish one that could never be surpassed. This reputation he built with his unmatchable saws as a secure and lasting foundation. The business has grown to its present huge proportions because the reputation established by its founder has been greatly broadened by his descendants.

The same policies, the same spirit of advancement, the same aspirations prevail today, and those who purchase DISSTON products hold in higher esteem the reputation behind them than the guarantee that goes with them, for a guarantee can be given by *anyone*, while a reputation must be earned.

Quality Tells

HENRY DISSTON & SONS

INCORPORATED

KEYSTONE SAW, TOOL, STEEL & FILE WORKS

PHILADELPHIA, U. S. A.

Reprinted from
THE DISSTON CRUCIBLE
of April, 1912.

FIELD NOTES

(*Continued from p. XV.*)

Classes in manual training were opened in Michigan City, Indiana, in the eighth grade and high school, in January. B. B. Cooley, of Purdue University, is the director.

Gary, Indiana, is attracting a good deal of attention just now on account of the productive efficiency of the manual arts department. Not only do the schools pay for themselves, thru the various activities of this department, but there is a goodly surplus made. The high school boys make the furniture required in the schools, for example. The classes doing productive work in printing, cabinet-making, and painting are called trade classes.

Pupils in the manual training department of the Pittsburg, Pennsylvania, schools will hereafter spend part of the shop time making useful articles for the schools. Towel holders to the number of fifteen hundred will be the first assignment of work from the board of education.

Manual training has been introduced into the schools of Langhorne, New Jersey. William M. Harley has been appointed director of the new course.

The St. Paul Builders' Exchange is deeply interested in school affairs and is urging the school authorities to see that adequate facilities are provided for teaching manual training in every grade school in the city. The Exchange feels that no further expense should be incurred in improving the high schools until the grade schools are put into first class condition, especially in this respect of providing for practical training for the boys and girls of the city.

Saco, Maine, has manual training for the boys of the eighth and ninth grades. Domestic science classes have been arranged for the girls of corresponding grade by the Educational and Industrial Union of the city.

The Fitchburg, Massachusetts, board of education has voted to establish a two-year course of study for the high school, for the benefit of pupils who cannot take a full four year course.

(*Continued on p. XIX.*)

FIELD NOTES

(*Continued from p. XVII.*)

Several changes and appointments have taken place among manual training teachers in Colorado. A. W. Muse is teaching manual training in the high school at Montrose. C. A. Veburg is director at Telluride. E. J. Thomson has changed from Loveland to Fort Collins. B. F. Rickel is the new director at Loveland, where a new equipment of lathes has been installed. Corliss Carpenter has charge of the work in Fort Morgan this year.

Charleston, South Carolina, has an industrial course in the high school, which includes woodworking, drafting, mechanics, and strength of materials. J. R. Guy is in charge.

The annual sale of the handwork of the children of southern mountaineers was held in Washington, D. C., in December. The proceeds of this sale go to further the educational work in the southern mountains. The work includes sewing, done by girls, and baskets and carvings, done by boys.

Arthur Thomas, of the Sacramento manual training department, has assumed charge of industrial work at Woodland, California. A system of manual training has been established, extending from the primary grades thru the high school.

William T. Elzinga, formerly an instructor at Stout Institute, has been appointed instructor of machine construction and forging in the Kansas State Manual Training Normal School, at Pittsburg, Kansas.

George H. Jensen of the Soldan High School of St. Louis who was granted a year's leave of absence returned in December from a five months study of European trade, industrial, vocational, and continuation schools.

A shop for the manual training classes has been built in connection with the high school at Oxnard, California. The outside shop obviates the noise which frequently proves disturbing in high schools. R. H. Thurmond is director of manual training at Oxnard.

(*Continued on p. XXI.*)

FIELD NOTES

(*Continued from p. XIX.*)

In Needles, California, the year-old manual training department gave evidence of having outgrown its first quarters, a single room, and the board of education offered the material for a new building to be put up by student labor. The work has progressed rapidly and the building will be ready for occupation soon. All of the work, except some of the heavier problems of framing, will have been done by the students, including furniture.

The building is of bungalow design, having four rooms, a manual training room, 30 by 38 feet, a lumber room, a furnishing room, and a domestic science room, 15 by 30 feet.

Robert A. Chestnut is director of the industrial arts department.

The report blanks provided in Adair county, Missouri, have spaces on one side for the grading in school subjects by teachers. On the other side they have spaces devoted to "industrial work," where the parents grade their girls on sweeping, dusting, baking, sewing, washing dishes, and ironing. Boys are marked by their fathers on feeding stock, milking, currying horses, providing fuel, and feeding poultry. Blank spaces are left for other sorts of home work. In a note addressed to teachers and parents, Superintendent Sipple says: "Pupils get credit for the work they do at home. Home grades should be considered by the teacher in making the final grade and to determine promotion."—Journal of Education.

Manual training was established in the schools of Danville, Illinois, in September, with L. A. Tuggle as instructor. Four shops are equipped for bench work which is taught in the seventh and eighth grades. Knife work, book-binding, and basketry are taught in the sixth grade. The new subject has added interest to all the school work.

South Bend, Indiana, is extending the manual training work downward from the high school thru the fourth grade. Four centers for seventh grade bench-work will soon be ready, and classes are being formed in basketry, cardboard construction, and claywork, for grades four, five, and six. The work in these grades will be closely allied with that of the art department.

(*Continued on p. XXXI.*)

READER'S GUIDE TO THE MAGAZINES.

Bird-Houses, *Craftsman,* April, p. 101.*

Blueprint Frame and Umbrella Stand, Ira S. Griffith, *Am. Carpenter & Builder,* April, p. 88.*

Cabinet Work for the Carpenter: Furnishings for the Porch and Grounds, Paul D. Otter, *Building Age,* May, p. 223.*

Chair Making, C. A. Zuppan, *Furniture Mfr. & Artisan,* Mch., p. 140.*

A Child's Garden of New Plants, David Fairchild, *Youth's Companion,* Mch. 13, p. 135.*

Clay Modeling, Stewart Taylor *Educational Handwork,* Mch., p. 25.

A Combination Book-Case and Writing-Desk, Paul D. Otter, *Building Age,* April, p. 159.*

Comments on "Quarter" and "Rift" Sawed Lumber, *Building Age,* April, p. 171.*

Concrete Construction: Its Possibilities of Strength and Beauty, *Craftsman,* May, p. 95.*

Constructive Details of a Roll-Top Desk, Edward H. Crussell, *Building Age,* May, p. 228.*

Construction of a Toilet Glass, J. H. Rudd, *Furniture Mfr. & Artisan,* April, p. 173.*

Embellishing the Back Yard, Violet Gordon Gray, *House and Garden,* May, p. 386.*

A Flying Blade and Glider, P. Baxendale, *Educational Handwork,* April, p. 55.*

Garden Pottery and its Various Uses, Jonathan A. Ransom, Jr., *House Beautiful,* March, p. 105.*

How to Build a Model Aeroplane, John W. Park, *Vocationist,* Feb., p. 16.*

How to Make a Grandfather's Clock, P. H. Herron, *Am. Carpenter & Builder,* May, p. 56.*

How to Make Useful Baskets, Margaret Rice, *Woman's Home Companion,* April, p. 42.*

Industrial Art Problems, Hugo B. Froehlich and Bonnie E. Snow, *School & Home Education,* April, p. 303.*

Length of Laboratory Period, B. R. Andrews, *Journal of Home Economics,* April, p. 141.

Library Table and Davenport, C. A. Zuppann, *Furniture Mfr. & Artisan,* April, p. 192.*

Lighting Fixtures for a Mission House, John D. Adams, *Woman's Home Companion,* April, p. 48.*

Light Woodwork: Windmills, P. Baxendale, *Educational Handwork,* Mch., p. 38.*

The Manual Training Teacher and the Vision of His Job, James McKinney, *Atlantic Ed. Journal,* Mch., p. 8.

Modern Tapestry Work in Sweden, Agnes Branting, *Internat. Studio,* April p. 102.*

Music Cabinets: Design and Construction, John Bovingdon, *Wood Craft,* May, p. 36.*

New Cupboards in Old Houses, Winifred Fales, *Keith's Magazine,* May, p. 334.*

*Illustrated.

READER'S GUIDE TO THE MAGAZINES.—Continued.

The New Heavy-Thread Tatting, Helen Marvin, *Woman's Home Companion,* May, p. 29.*

New Work Aprons, R. H. M. Fillebrown, *Ladies' Home Journal,* April, p. 41.*

Plan for a Small Sanitary Dairy House, *Building Age,* April, p. 165.*

Planning and Mounting an Exhibit, II, George W. Eggers, *School Arts Magazine,* April, p. 551.*

Primitive Industries, VIII, Clothing, A. H. Quiggin, *Child Life,* March, p. 86.*

Proceedings: High School Conference, University of Illinois, Nov. 21-23, 1912:

Domestic Science in the High Schools of Illinois, Miss Pincomb, p. 107.

Design in Education, Charles F. Kelley, p. 144.

The Need of Good Design in the Manual Arts, S. J. Vaughn, p. 147.

Cooperation of Art and Manual Training, Clara E. Ela, p. 150.

Discussion of the Course of Study in Machine Drawing, Frank S. Needham, p. 153.

The Real Thing in Design, Mr. and Mrs. Walter D. Baker, *School Arts Magazine,* May, p. 573.*

Report on Alumni Conference, Feb. 21, 22, 1913, Teachers College, New York, March 29:

Organization of the Curriculum in Industrial Arts in the Elementary School, Lois Coffey, p. 79.

Possibilities for Progress in Fine and Industrial Arts (Abstract), William T. Bawden, p. 92.

The Rockport Type of Fuming Box, John N. Nind, Jr., *Furniture Mfr. & Artisan,* April, p. 186.*

The Rose in Cross-Stitch, R. H. M. Fillebrown, *Ladies' Home Journal,* May, p. 87.*

Rustic Baskets for Growing Flowers, John S. Adams, *Woman's Home Companion,* May, p. 28.*

School Handwork: Bridges, Robert F. Wootton, *Educational Handwork,* Mch., p 27;* April, p. 57.*

Simple Instructions for Plotting a Lawn Sundial, Claude L. Woolley, *House and Garden,* May, p. 379.*

Structure of Common Woods, James A. Weale, *Furniture Mfr. & Artisan,* Mch., p. 132;* April, p. 164.*

Some Insect Inhabitants of a Few British Timber Trees, A. E. Johnson, *Eductaional Handwork,* April, p. 51.*

Tapestries—Their Origin, History and Renaissance, *House Beautiful,* May, p. 176.*

Tee-Squares and Drawing-Boards, *Wood Craft,* April, p. 8.*

Timber Boring Insects, A. E. Johnson, *Educational Handwork,* Mch., p. 34.*

Toys and Toymaking, George F. Johnson, *School Arts Magazine,* May, p. 581.*

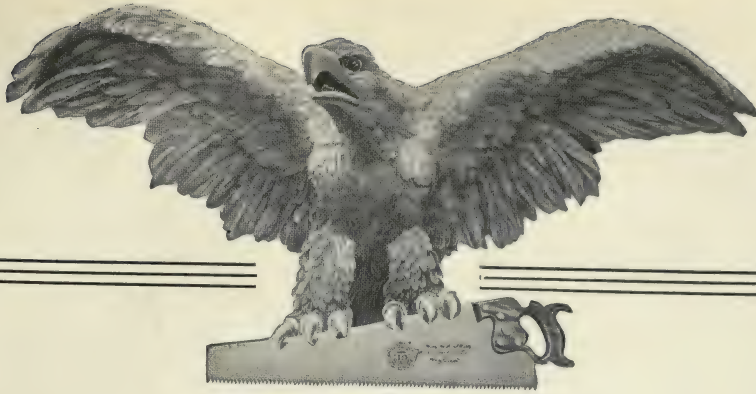
Two Flower-Stenciled Bedroom Sets, Elizabeth Roberts and Harriet Joor, *Woman's Home Companion,* April, p. 50.*

The Venetian Fountain Spell, Esther Matson, *Craftsman.* May. p. 30.*

Waste Basket and Table, Ira S. Griffith, *Am. Carpenter & Builder,* May, p. 60.*

What Industries Are Worth Having, F. W. Taussig, *Atlantic,* May, p. 701.

*Illustrated.



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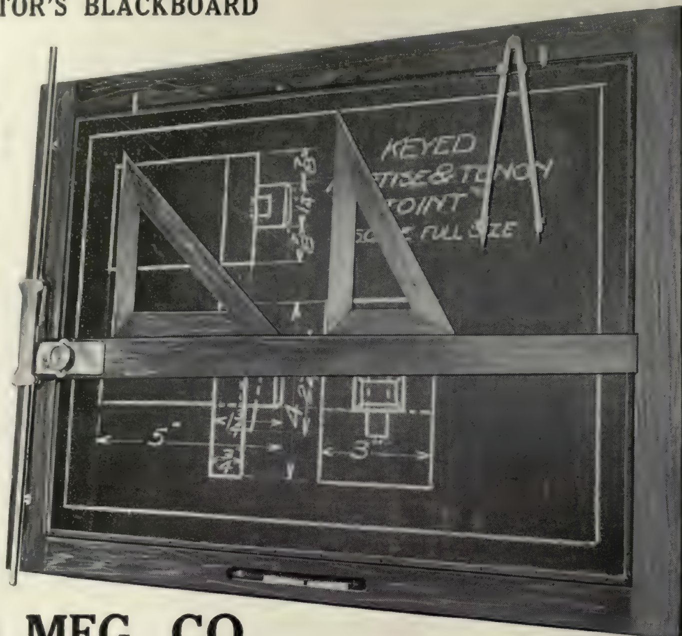
A NECESSITY

An inclined frame for wall attachment, having removable metal bound blackboard panels three by four feet in size and finished for use on both sides.

This combined with our automatic tee square, framed triangles and aluminum compasses makes a very substantial addition to the necessary equipment of the shop or drafting room. Tee square may be attached to any blackboard. Full information on request. Write for it now.



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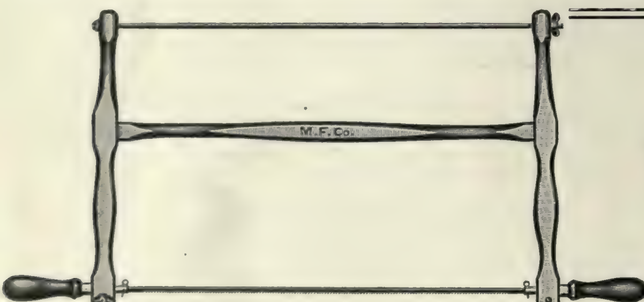


THIS TURNING SAW

is about the best tool of its class made, and is splendidly adapted to manual training work. It is extensively used in many schools in all parts of the country, and invariably gives entire satisfaction.

Birchwood frame, ebonized handles, steel tension rod, screw friction and index on each handle showing how far to turn.

Made in 6 sizes, from 12″ to 24″.

Write for prices.

Millers Falls Company

28 Warren St. New York City

MILLERS FALLS CO. MILLERS FALLS, MASS. U.S.A.

TRADE NOTES

The commercial exhibits at the Des Moines meeting of the Western Drawing and Manual Training Association were attractive, and as usual formed one of the most pleasing features of the exhibit. Practically all of the leading manufacturing and supply houses in manual training and art goods were represented.

Orr and Lockett Hardware Company had a large display of lathes, benches, tools and other manual training equipment.

E. H. Sheldon and Company, Simmons Hardware Company, Columbia School Supply Company and the Grand Rapids Hand Screw Company had displays of benches, cabinets, tables, tools, etc. The Grand Rapids Hand Screw Co. were showing their new domestic science table with "Sanitoid" top.

The Oliver Machinery Co. were represented by Mr. A. J. Druick of their Chicago office who showed the visitors a complete installation of manual training equipment in the new Des Moines high school.

Armstrong & Matteson of St. Paul had a line of blue-prints of manual training projects on display. The Maudsley Press of Valley City, North Dakota, displayed a number of interesting projects, the work of students using the Mechanical Science series of textbooks.

S. C. Johnson & Son, Binney & Smith, Eugene Dietzgen & Co., Frederick Post Company, Keuffel & Esser Co., Thomas Charles Co., Dixon Crucible Co., American Crayon Co., School Arts Magazine and Charles Scribner's Sons were among the other exhibitors.

The Albo Manufacturing Co., of Pittsburgh, Pa., is making an instructor's Blackboard drawing outfit that is sure to interest teachers of shopwork as well as teachers of mechanical drawing and design. It consists of a tee-square sliding on a fixed rod at the left of the frame. two triangles, a compass and metalbound blackboard panels, three by four feet. which can be removed and replaced as easily as a piece of paper is tacked on a drawing board. More and more the demand is growing for such an outfit which enables the teacher not merely to show the process of making a good drawing but also to keep a high standard of drafting technique constantly before his pupils.

(*Continued on p. XXXIII.*)

TRADE NOTES

(*Continued from p. XXXI.*)

Many teachers of machine shop work find difficulty in getting a sufficient variety of suitable projects for their classes. They are too busy to design projects fast enough or they have difficulty in getting the patterns made or they have no foundry in their city that makes castings of the right grade. Such teachers will welcome the announcement of J. D. Wallace of Chicago, Ill., an engineer and teacher who is making a specialty of furnishing castings and sets of detail drawings for gasoline engines, a household emery grinder and a vacuum cleaner.

If a manufacturer has thru many years built up a reputation for making fine tools and then is discriminating and modest enough to say that one of his own products is "about the best tool of its class made" you can depend upon it that when you purchase the tool you will not be disappointed. This is the kind of statement made by the Millers Falls Company about their turning saw which they consider especially well adapted to manual training school work.

Four straws that indicate which way the wind is blowing:

Straw No. 1. A few days ago we learned that five cities in a Western state will introduce printing as a manual arts subject next year.

Straw No. 2. R. A. Loomis, instructor at the Oswego State Normal and Training School, has announced an attractive summer course in printing.

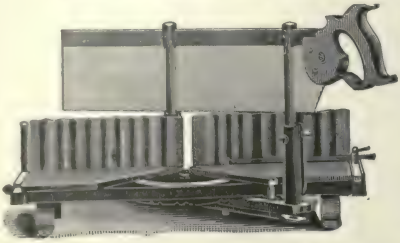
Straw No. 3. Barnhart Brothers & Spindler, one of the largest American dealers in print shop equipment, have seen the coming demand for printing outfits, and are offering the benefit of their long experience to any teacher who is considering the introduction of printing.

Straw No. 4. George E. McClellan of the Lakeside Press School of Printing in Chicago, is putting his series of problems in practical typography into book form and they will be published very shortly by The Manual Arts Press.

The indications are that there will be fair weather for printing as a school subject before long.

(*Continued on p. XXXV.*)

GOODELL MITRE BOX



MADE OF STEEL —— CANNOT BREAK

First in Quality and Improvements

Automatic stops for holding up saw. Corrugated Backs. Graduated. Gauge for duplicate cuts and many other features. If you want the best, one with no trouble from broken parts, you will take no other.

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If you use different sizes of Drills you need a holder for convenience and as a guard against loss. Here is the article. This

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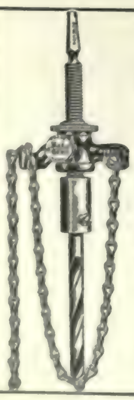
Our catalog describes and illustrates many kinds of Twist Drills, Reamers, Cutters, Taps, Dies and other lines, and is free. Send for a copy and let an order follow. Large or small orders receive the same prompt attention.



If you had one of these

Red Devil Chain Drills No. 2011

you could drill through anything with a common bit brace.

The most practical attachment ever made for drilling IRON, SLATE, STONE. You want one and can get one from your local ha dware store if you insist on **RED DEVIL** No. 2011, automatic feed, ball-bearing chain drill. But if your dealer cannot supply the genuine RED DEVIL, take no substitute or imitation. Send us his name and $1.50 and one only sample will be sent you prepaid.

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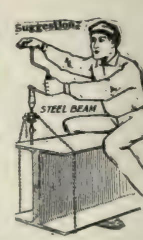

WITH A COMMON BIT BRACE

TRADE NOTES

(*Continued from p. XXXIII.*)

Some people are always looking for something for nothing. Some other people are always avoiding something for nothing because they are not interested in what is usually found on the end of the string that is tied to it. Both of these classes of people ought to be satisfied with the straight advertising proposition of the Pike Manufacturing Co.. to send a sample of their famous India oilstones for four cents, which is barely enough to pay cost of packing and mailing.

For many years the words "Scranton, Pennsylvania," taken together have always brought to mind the great Correspondence School, but now these words connote more: they suggest also a center for drafting instruments and drawing-room supplies. The Technical Supply Company. of Scranton, is advertising its instruments thru a little monthly magazine which is being sent on request.

BOOK NOTES

The demand for books on the manual arts has been growing for several years, but only recently has become sufficiently differentated to allow such books to be very definitely classified. Because the manual arts in school work are comparatively new and often almost without organization, the demand for books has been so varied that the temptation has been for an author to tell all he knew about the whole field in one book. He would attempt to make it a guide book for teachers, a pupils' textbook, a course of exercise problems, and a library reference book all in one. This, however, has not proven satisfactory and several definite types are emerging from the confusion. These are: (1) A textbook for pupils, describing typical processes and giving a great amount of data and information on the subject represented by the book. (2) A book of problems, usually with a few notes on the problems for the use of pupils. (3) A teacher's handbook giving methods of teaching, suggestions concerning the organization of courses, equipments, and sometimes processes in detail. (4) A reference book for either teacher or pupil.

In books on mechanical drawing the first and second types of book have usually been combined in one, but a new book has just been published by The Manual Arts Press which is distinctly of the first type. In fact, so far as we know it is the first to occupy this new field. This book is *Mechanical Drafting* by H. W. Miller, M. E. head of the department of General Engineering Drawing at the University of Illinois. No trouble or expense has been spared to make this an ideal textbook containing information needed in any modern course of drafting. It leaves the teacher free to give any problems he pleases, yet it assists him by placing in the hands of his pupils a great amount of practical data not usually given in textbooks, and sometimes very difficult to find. The book contains over two hundred pages and is bound in limp leather uniform in style with the author's *Descriptive Geometry*.

John Wiley and Sons have just announced two new books in their *Technical Series* that will be of special interest to many of our readers. The first is entitled *Agricultural Drafting* and is written by Charles B. Howe of the Stuyvesant Technical High School, New York City, and chairman of the committee that prepared the mechanical and architectural drawing outlines for the New York State syllabus. The second is on *Architectural Drafting*, and is written by Charles B. Howe and A. B. Greenberg. Books on both these subjects are needed at the present time.

The series of articles on *Inexpensive Basketry* that have been appearing from time to time in this magazine have received much favorable comment, and with the cooperation of the author William S. Marten, have been put into pamphlet form in the *Reprint Series* published by the Manual Arts Press. In order that they may benefit the greatest number of teachers and pupils, the price has been placed at 25 cents a copy. One of the distinctive features of this work is that it shows how to use native materials that can be gathered by the pupils themselves. Another is that the baskets made as described are large enough to be really serviceable. A third distinctive feature is that instead of covering the whole field of basketry, it treats of one type with thoroness, and illustrates the processes with full-sized photographs of hands at work. Moreover, the practicability of this type of work has been demonstrated in schools where it has been taught.

Anyone looking for reliable information concerning books on any branch of the manual arts will find it in the 1913 descriptive catalog issued by The Manual Arts Press. It is entitled *Books on the Manual Arts*. It is just what is needed in selecting "helps" and in making up a library list for the year 1913-14.

The Drafting Room Series by *Frederick H. Evans*, announced several months ago, is now ready for distribution. This unique work in card catalog form prepared by an experienced draftsman and teacher is described in some detail on pages XLIV and XLV, where a special offer is made to teachers who wish to secure a copy for their library at the lowest price, or examine it with reference to adoption in their classes for 1913-14.

OUR APPROVED LIST OF BOOKS ON THE MANUAL ARTS

ONLY such books as are recommended by the Editor of the MANUAL TRAINING MAGAZINE appear in this list, and the aim will be to keep in the list the best books on the subjects treated. For a more complete list see our catalog, ''Books on the Manual Arts''. This catalog lists and describes all of the standard and the best of the recent books. A copy will be sent free to any address on request.

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1. THEORY, PEDAGOGY, GENERAL.

Handwork Instruction for Boys. By ALWIN PABST. Our price, postpaid $1.00

A remarkably clear and stimulating book on the development and principles of manual training by the director of the training school for teachers in Leipsic, Germany. Translated by Bertha Reed Coffman.

Hand and Eye Training. By WOLDEMAR GOETZE. Our price, postpaid 1.50

An English translation of a notable German book on the history, principles and practice of manual training.

Economics of Manual Training. By LOUIS ROUILLION. Our price, postpaid 1.50

The only book treating comprehensively the cost of equipment and maintaining manual training schools.

Manual Arts for Vocational Ends. By FRED D. CRAWSHAW. Our price, postpaid .... .85

A strong and convincing plea for the development of the present school machinery to serve the ends of vocational education.

2. WORK FOR GIRLS.

Handicraft for Girls. By IDABELLE MCGLAUFLIN. Our price, postpaid 1.00

A handbook for teachers, detailing a five-years' course in sewing for girls in the public schools. Chapters on stitches, fibers and fabrics, cloth and cardboard construction, basketry, dress in its relation to art, and home furnishing. With many illustrations. An excellent book—thoroly practical.

A Sewing Course. By MARY SCHENCK WOOLMAN. Our price, postpaid 1.50

A course of study, description of stitches and instruction in methods of teaching by the head of the Domestic Arts Department, Teachers College, New York City. (Interleaved Edition, $3.50).

Educational Needlecraft. By MARGARET SWANSON and ANN MACBETH. Our price, postpaid 1.35

The best book yet produced combining art and needlework in school problems. A course of study illustrated with numerous line drawings, wash drawings and color plates

Textiles and Clothing. By KATE HEINTZ WATSON. Our price, postpaid 1.50

About half of the book is given to the origin and methods of working textile materials, and the remainder to sewing and dressmaking. Richly illustrated, especially the part on textiles. A valuable textbook for high schools or reference book for teachers. (Textbook Edition, $1.25).

Elements of the Theory and Practice of Cookery. By MARY E. WILLIAMS and KATHARINE R. FISHER. Our price, postpaid 1.00

This book combines the features of a working guide for the kitchen laboratory with those of a handbook for study and reference.

V' 'LUME XIV NUMBER 5

Manual Training Magazine

JUNE, 1913

THE CULTURE ELEMENTS IN THE MANUAL ARTS.

ROBERT W. SELVIDGE.

OUR ideas of what constitutes culture depend largely upon our points of view. Recently, when asked for a brief definition of culture, a professor of mathematics said, "To me culture means a trained mind capable of careful and logical thinking." A professor of Latin said, "It means a knowledge of literature and art derived from a study of the classics, with the mental power and attitude of mind gained from such study." A young lady said, "I think it means to dress with good taste, to appear well in society, to dance, to know something of music, art, and the languages, and to conform to the well established social customs." A messenger boy gave the laconic reply, "Not eatin' with your knife, I suppose." These definitions do not satisfy. Culture means more than any of them or all of them combined. It means an appreciation which results in a broad human sympathy—a consideration for the life and work and hope and pleasure of others. It means an appreciation of the service society has rendered us and the power as well as the desire to serve humanity. Culture should do more than make sponges of us. It should fill us with the desire to give back to the world some of the good things we have received.

We may divide education into two great divisions—education for culture, and education for vocation. The dominant idea in one is *appreciation,* in the other it is *service.* These ideas are not exclusive. What is cultural for one may be vocational for another. If we take a course in news writing in a School of Journalism, for the purpose of learning how news is written, such a course would be to us a part

4

of our liberal education; but if we take the course with the view of becoming a reporter it would be a part of our vocational training. So, if we take a course in chemistry in order that we may read the current literature with intelligence, and understand a little better the material world about us, the course would be cultural; but if we take the same work, with a view of becoming a chemist, the work is vocational for us, but it is none the less cultural.

Vocational training is cultural in so far as it gives an appreciation of human endeavor. In the limited field which it covers it may be more highly cultural than an abbreviated course in the same line which usually is considered desirable for its culture value. *A course is non-cultural not because of what it contains but because of what it does not contain.* The trouble is that vocational training often narrows us down to a particular field before we have had time to get the desirable things outside the field of our vocation. Culture does not consist of a superficial knowledge of many things but it does include a knowledge of the essential facts of many phases of life. It being impossible for any one of us to acquire the sum total of knowledge, we select what we judge to be the most essential in the various fields and the acquiring of this we call a liberal education.

If we are not wholly mistaken in the true meaning of culture, most of our liberal culture courses of today are sadly wanting in one essential feature. They give us an appreciation of the work of ancient Greece and Rome. We get a little knowledge of the problems of those people and how they solved them. We are taught to copy their works of art and to build Greek temples for our money changers. We are taught a little of two or three sciences and in economics and sociology we are given a peep at our present day problems. These things are recognized as the background of what we call the liberal professions. The difficulty is that these alone tend to cultivate in us a leisure class ideal and such an ideal places our sympathies with that class. Such an idea of liberal education leaves out of consideration that vast multitude of workers who feed us, clothe us, and provide us with our luxuries. It leaves us utterly ignorant of the things which surround us. We have no conception of what they cost in human energy nor do we know anything of the conditions under which they were produced. Wanting this knowledge we can have no adequate appreciation of the service rendered us.

PROPER EMPHASIS ON VALUES.

Undoubtedly work in the Manual Arts may be vocational and just as certainly it may be a part of a liberal education. It is vocational in so far as it enables a man better to perform his labors. It is cultural in so far as it enables him to appreciate more fully the service rendered in the production of the things about him. It is perhaps both cultural and vocational in so far as it helps him to understand the great social and industrial problems which, in a democracy, every man must help to solve. We pity the man who cannot appreciate good music and we might well pity the man who cannot appreciate a good construction. A skilled man contemplates a piece of good work with much the same sort of esthetic pleasure that we feel when listening to good music or looking at a good picture.

We have not emphasized too much the general educational value of this work but we have, to a large extent, neglected to emphasize the vocational side. This last we might have done without in any way detracting from its value as a culture subject. We have been influenced too much by the idea that a thing is good because it is made by hand. It is true that most of the old hand made products were honestly and substantially made and that much of the modern, machine made product is bad from the standpoint of design, material, and workmanship, but the difference does not lie in the fact that one was made by hand and the other by machine. The hand made goods were better because of the personal contact, sympathy, and understanding between the producer and the consumer. The factory has destroyed this personal contact but the remedy does not lie in going back to hand production. We must go forward to the solution. The standardization of products, with the resulting economy, makes the factory system inevitable. A knowledge of the system is necessary. With such a knowledge we may understand something of the hopefulness as well as the hopelessness of some forms of labor. It will help us to understand "the moving why they do it" when labor takes what seems to be an unwise or unsocial attitude.

The handwork of our school shops gives valuable physical and mental training. It probably contributes more to the general development of the student than any other subject, but it gives little insight into modern industrial practices. Handwork is good for the boy and he needs more of it but he needs a different kind. There is little more reason, industrially, for teaching a boy to make a dovetail joint

by hand than there is from a commercial standpoint to teach him partial payments. We need to teach boys how things are produced today, not because we expect him, necessarily, to engage in an industial occupation but because we want him to understand modern production.

THE ESSENTIAL ELEMENTS IN MANUAL TRAINING.

The men who have labored long in the field of manual training usually insist that in all manual training worthy of the name there must be these elements—The analysis of tools and tool processes, systematic instruction in the use of tools, a study of materials, and an analysis of construction problems. There are many other desirable elements but without these we are hardly justified in labeling the course manual training. There is another element just as necessary as those enumerated. It is one which we have quite generally neglected. It is instruction in industrial methods and practices. Students should know how the things which supply our wants are usually produced. They should know the essential elements involved in factory production. This is necessary from the standpoint of culture as well as usefulness. Handwork alone in the school is not sufficient nor should the training consist in superficial instruction in a large number of occupations.

The movement for industrial education need not involve the tearing down of our present organization nor destroy the broad basis of our general education. However, it will require additional instruction in factory methods and practices. It may be necessary to increase greatly the time given to the subject and permit a student to elect a course with special reference to an industrial pursuit. Such a plan would add greatly to the usefulness of the course as a practical training for the boy and if properly taught greatly increase his social vision. Even if he did not engage in the occupation it would give him a keener appreciation of society's contribution to his welfare. Such a training would tend to develop the social conscience and no single element is more needed in our national life today.

A MANUAL TRAINING WORKSHOP BUILT BY GRAMMAR SCHOOL PUPILS.

Charles G. Wheeler.

IN these days when so much is provided for young people without effort of their own, it seems worth while to give a word of commendation when they themselves do something which is usually done for them. The grammar school boys of Brunswick, Maine, have been using an unsuitable basement room for their manual training. The school authorities tried to find a place fit for a workshop, but were unable to secure any available building within reasonable distance of the school. The problem was then put to the boys themselves and they very readily undertook to solve it by building, with their own hands, a workshop upon the school grounds. The result is partly shown in the accompanying illustrations.

The shape and proportions of the building were necessarily determined by the dimensions of the land available and the proximity of the school-house itself. With the exception of a small sum for digging post holes, and the cost of the chimney, nothing has been paid for labor in the construction of this building. The boys have done all the work. About half of the boys have had one year's training in ordinary bench-work at the rate of two hours a week, but the other half were beginners with no previous instruction in the use of tools. Yet all have worked successfully on this building. The work has been voluntary on their part, without compulsion or urging, and has been steadily carried on, not merely during the hours usually allotted to manual training, but also at all available times, before, during, and after school hours.

On account of the rapid approach of winter it was thought best not to have the boys build the chimney, otherwise that also would doubtless have been done. In the spring it is planned to add concrete steps, to be built by the boys, thus giving them some lessons in the preparation and use of concrete. In fact, but for increasing the expense, a concrete foundation would have been used for the entire building, instead of cedar posts,—an improvement which can of course be made at some future time.

The width of the building is 16 feet and the length 70 feet, with a side porch 4 feet wide by 20 feet long, see Fig. 1. Owing to the peculiarity of the situation it was thought best to have but few windows on the side toward the schoolhouse. On the other side and end there is a continuous row of windows, as shown in Fig. 2, for abundant light

FIG. 1. THE SHOP BUILDING IS SIXTEEN FEET WIDE BY SEVENTY FEET LONG, WITH A SIDE PORCH FOUR BY TWENTY FEET.

FIG. 2. THE SHOP IS PROVIDED WITH ABUNDANT LIGHT BY A CONTINUOUS ROW OF WINDOWS ON THE SIDE FACING AWAY FROM THE MAIN BUILDING.

is one of the most essential requirements of a good workshop. The windows have been placed as high as possible, to give more available wall space and also to have the light come partly from above. By the use of secondhand doors and a few odd-sized windows a slight saving in expense has been effected.

The smaller door in the porch is for everyday use. The large

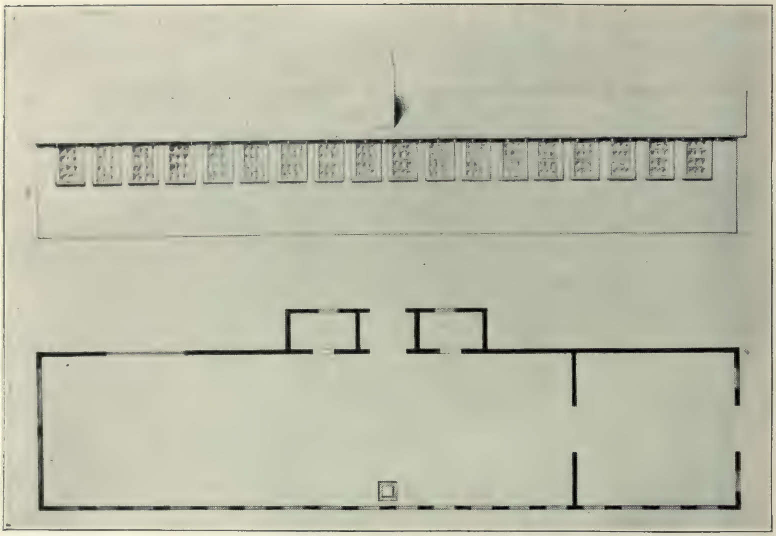


FIG. 3. THE INTERIOR IS DIVIDED INTO A LARGE ROOM FOR THE SHOP, AND A SMALLER FOR STORAGE.

double doors in the end of the building are for occasional use in moving some large object, unloading boards, etc., the threshold being about on a level with the floor of a wagon. A rather flat roof—one-fourth pitch—was adopted (in spite of the fact that it is not so weather proof or durable in this climate as a steeper pitch) to prevent excluding light from the windows of the adjacent school building. One of the numerous roofing fabrics would perhaps have made a more durable covering for this roof than shingles, but the latter were preferred on the ground of looks as the roof is quite conspicuous and the school building itself is a dignified brick structure.

The type of construction used for the frame is that in common use nowadays for buildings of this character. The sills are 6″x6″; the studding, 2″x4″; the plates, 2″x4″ (laid double); the floor beams,

2″x8″ (spaced 12″ apart and supported in the middle by a central longitudinal sill 4″x6″); the rafters, 2″x6″ (tied with collar-beams). The upper floor is of matched hardwood. At present the building is unfinished inside, but it could well be sheathed or lined with some form of "beaver-board", which would make it warmer as well as more attractive in appearance. The floor plans and elevations, Figs. 3 and 4, further illustrate the main outlines of the project. A tablet made by the boys is to be placed upon the outside.

FIG. 4. THE THRESHOLD OF THE LARGE RECEIVING DOOR IS ABOUT ON A LEVEL WITH THE FLOOR OF A WAGON.

No claim would be made that every joint is as accurately fitted as if this building were the work of regular carpenters, but the structure is thoroly, strongly, and neatly built. While an eye trained in such matters could detect minor flaws in the work (as is, of course, always the case with the work of learners or amateurs), there is nothing about it to cause unfavorable comment from any ordinary observer,—and the trained mechanic would notice defects merely in unessential details. Much credit is due the officials of the School Department for their hearty cooperation. But for the cheerful help and patience of the different teachers also, it would have been hard to put up so large a building at the approach of winter and directly under the windows of five or six schoolrooms. The advantage of the training which these boys have received is obvious, as well as the advantage to the school and to the community. It is of course necessary to have an instructor who is familiar with such work, altho even without that, the advice and services of a carpenter as "boss" could be secured almost anywhere.

The erection and finishing of so large a building by boys of grammar school age would seem to many a rash undertaking, but when it comes to matters of practical execution like this the intelligence and capacity of the average boy is often underestimated, for he can turn out an astonishing amount of good work, under competent supervision. Extreme accuracy and a high degree of technical skill can not be expected,—for these come only after long continued experience—but work of this kind is not too ambitious for such boys, under proper instruction.

It is believed that so large a structure has not very often been built entirely by *grammar school* boys with so little previous training. Therefore this example may be of help to some school which despairs of having suitable quarters for manual training. The boys of the Brunswick grammar school have shown how to build a good workshop, and have had a good time doing it. The way they have taken hold and the spirit they have shown about it have been very gratifying to the instructor.

MECHANICAL TOY-COWBOY, DESIGNED AND EXECUTED BY PFEIL, CHICAGO, TEACHERS COLLEGE.

VOCATIONAL GUIDANCE AND THE MANUAL ARTS.[1]

FRANK M. LEAVITT.

DURING the past five years two terms have come into prominent use in educational nomenclature. These are "vocational education" and "vocational guidance". One of the sub-divisions of vocational education is "industrial education", that education which relates more particularly to vocations connected with building and manufacturing. It is my plan to discuss the relation of vocational guidance, industrial education, and that branch of school work which we call "the manual arts". It will be well for us to agree pretty closely as to what we mean by each of these three terms.

"The manual arts" have been accepted as a school subject largely on the ground that constructive handwork contributes certain elements to the rounded character of an individual that neither literary nor scientific subjects can give. The manual arts activities require the working by plan for the accomplishment of some preconceived result. This involves a careful adjustment of one's own powers; the thinking of the thing thru, from the beginning to the end; and the actual shaping and adapting of materials by known processes until the desired result stands, definitely right, a finished product. While I am entirely clear that the earliest advocates of manual training had in mind chiefly the education of the future mechanics of the country, it is equally clear that the schools have generally admitted this work into the curriculum for the purpose of improving the educational method of dealing with *all* children.

"Industrial education" has come to mean something radically different from manual training during the last six or seven years. It does not mean a separate subject in the curriculum but rather a revision of the whole scheme of education during the last year or two before the pupil enters upon his vocational life. It means that the vocational motive shall be the central fact in this course and that the other school studies shall be related to the specific industrial work as closely as may be. It is not intended to rob the course of any culture which it ever had for the children who leave school at an early age but rather to see to it that such culture becomes real and tangible thru its relation to life and its stern necessities. Mathematics, science, geography, hygiene, and even history and English are taught as vital factors in the

[1] Read at the annual meeting of the Wisconsin School Arts and Home Economics Association, Kenosha, Wisconsin, April 11-12, 1913.

earning of a living. It is assumed that the first essential of culture is economic competency.

"Vocational guidance" we have always had wherever there were growing children entering upon the years of self support, but the term has come to mean something more specific than that, a matter of scientific organization of pertinent facts in such a way that they may be made available and trustworthy guides to the child from the time when vocational interests become vital, whenever that time may be, until he has entered upon some career of profitable employment and has become sufficiently established in the career to give reasonable hope that he will eventually succeed in it. Vocational guidance concerns itself with the selection of suitable courses within the school; the bridging of the chasm which lies between school life and vocational life; and the subsequent following up and heartening of the young worker. This is the time, to use the words of a Chicago cartoonist, "When a feller needs a friend", if he ever does in his life.

It is not the purpose of this paper to describe the various plans which have been evolved in half a dozen cities for carrying on this work. Suffice it to say that in some places we find vocational counselors and vocational assistants employed in the schools; in others, that surveys are being made, educational, social, and vocational, as a basis for guidance; that in another, courses of study are arranged in such a way that, in advising the pupils as to elections, the principal must naturally exercise some measure of vocational guidance; and that in still another the study of vocations is made one of the regular school subjects, with weekly assignments, recitations, and lectures. I say it is not the purpose of this paper to describe such plans in detail but merely to point out and to emphasize the fact that experimenting with the problems of industrial education leads inevitably to the belief that vocational guidance is an absolute necessity if vocational education is to be at all effective in accomplishing its purpose.

With these three rather distinct and separate movements clearly in mind, manual training, industrial education, and vocational guidance, let us see if they may not be brought into closer relation with immense benefit to the school system.

There are those who claim that industrial education and vocational guidance are not properly matters for the public school system to promote and control. It is not necessary to enlarge on that fact, especially as regards industrial education. I do not propose to discuss this question directly tho I would say, in passing, that I am unalterably

opposed to the idea that anything which is fundamentally important to the development of children of school age, say from five to eighteen years of age, is or ever can be foreign to the American public school system. If the schools, as now organized and officered, are not competent to deal with the situation they should be speedily developed and improved until they are.

ORIGINS OF THESE MOVEMENTS.

Vocational guidance, even more than vocational education, came from without the schools. In Europe it originated with the adult labor exchanges but after a time it inevitably reached the school door and eventually crossed the threshold and became a part of its accepted organization. In the United States the progress has been along essentially the same lines, altho we have no public labor exchanges. It began with the advising of adults as to vocational possibilities, in themselves and in their environments, and now, within six years of the establishment of the first "Vocation Bureau" in the country, vocational guidance is a familiar term in educational literature.

The idea of adjustment between education and vocations is even more familiar, and it is safe to say that the schools have gone more than half way in making and projecting such adjustment. For example note the spirit of the resolutions passed by the National Education Association last summer:

> *Whereas*: In spite of the fact that our schools have met well the social and economic problems which have confronted us to date, there has been an ever increasing demand by the public for greater practical proficiency on the part of our pupils of all ages and grades.
>
> *Whereas*: Such liberal education has, in a measure at least, failed to meet this demand in the opinion of those who judge by results; and
>
> *Whereas*: Many of our formerly well-accepted principles, as well as our educational traditions, are undergoing constant and rapid revision, as a result of the more recent scientific investigation and philosophic readjustments, be it
>
> *Resolved*: That this Association places itself on record as favoring such changes in the courses of study in our elementary and secondary schools, together with such changes in methods of instruction as shall make it possible to assist the pupil in the ready application of such knowledge as he may acquire to actual life conditions.

Even more significant are the following quotations from the report of the New York Vocational Guidance Survey, made public last month. This survey perhaps was the most thoro and scientific yet made. Its conclusions, in part, are as follows:

(1) A system of vocational guidance which would mean finding jobs for children under sixteen would not only be futile but dangerously near exploitation, however well meant the intentions might be. The facts showed, broadly speaking, that there are no jobs for children under sixteen which they ought to take. Employers' remarks in regard to children under sixteen add to this impression: "We don't want boys under sixteen." "They are too young." "We have no time to train them." "They spoil too much material." "They aren't ready to learn anything until they are sixteen." "They aren't any good." "We won't take them." "They aren't game to do real work." "Sixteen is the best age to start."

(2) It is useless to attempt to guide children into vocations before we have more information. Neither the Vocational Guidance Survey or any other organization has adequate information at present about the demand for workers or the opportunities for and conditions of work and training in the twenty largest industries, not to mention the legion of minor ones. What the children want is vocational training. The kernel of truth in this popular movement for vocational guidance is the need of vocational training for children. Vocational guidance should mean guidance for training, not guidance for jobs. Hence, under present conditions the interests of public school children can best be served, not by the establishment of a vocational bureau, but by the development of vocational training.

A study of the facts of industry is, therefore, the only sound basis for discovering what types of industrial training—whether prevocational schools, vocational schools, continuation schools, or half-time work in school and shop—are practicable and desirable for children between fourteen and sixteen, and sixteen and eighteen years of age.

For these reasons the Vocational Guidance Survey has been changed to the Vocational Education Survey. The proposed survey will be carried on from an educational point of view, and its specific object will be to collect data about actual industrial conditions for the use of the schools in working out types of industrial training. We do not propose to plan such training, but we propose, if it is desired, to be an agency for the collection of necessary facts which the school has not the time to gather.

CONCLUSIONS.

It seems to me that reflection on the facts and opinions given above will lead to the following conclusions:

(1) Any system of vocational guidance leads inevitably to the establishment of vocational education, while a system of vocational education soon reaches its effective limits without the establishment of some systematic plan of vocational guidance.

(2) Industrial training is needed to keep children out of low grade, unprogressive, and stultifying occupations, by interesting them

in a higher grade of industrial work and showing them how to rise *thru* the lower to the higher.

(3) The best kind of vocational guidance for 50 per cent of our school children is that which comes thru this kind of training, and intelligent guidance is impossible without it.

(4) This kind of guidance is possible only when it reaches down into the full time, compulsory school period.

(5) It is fundamentally important that the school work shall serve to reveal and to shape the *special* aptitudes and tastes of the pupils, to the end that the individual may be directed along the line of his *greatest* possibilities. This is consistent with the principles of modern scientific management in our industrial plants.

If the above conclusions are accepted, it is plain to see that there is a close and vital relation between the much criticized manual arts courses and *vocational guidance.* Indeed I believe that the teachers of the manual and household arts are destined to play a most important part in this latest progressive educational movement. At the present time, when so few superintendents and principals, relatively speaking, have made a study of vocational guidance, there will be a great opportunity for these teachers to influence the situation by wise counsel and suggestion, and by offering to inaugurate experiments by which the details may be worked out. Indeed when one becomes discouraged at the difficulties and complications arising from the opposition of stubborn and conservative educators; the unthinking resistance offered by the indifference of both the schoolmen and the general public; or by the short-sighted, short-cut policies of aggressive business men who feel that they are competent to settle the whole matter "out of court" so to speak; one comes back with a feeling of comfort to the assurance that, in the teachers of the practical arts, we have a leaven which must eventually leaven the whole mass.

OPPORTUNITY OF THE MANUAL ARTS TEACHER.

You teachers of the practical arts, however, can accelerate or retard the movement by your attitude and ideals. While I believe that the school arts have other and more general functions to perform I can not help feeling that in this movement to democratize the public school system lies the greatest opportunity for real social service. So I would urge that while you keep on organizing your courses for the most progressive children, those who are destined for higher education, you give heed especially to the horde of children who are now leaving school

altogether, and see what your courses, if properly modified, might do for them both in the way of vocational guidance and vocational training.

In the first place I believe that the skeleton of the course or courses may well be essentially like the good manual arts courses to which we have become accustomed, but I am sure that school programs must be made more flexible, and that courses in the manual and household arts should be subject to modification for individuals or groups who will not or *may* not complete the full program of studies. For example, there are, in most schools, a number of over-aged children in the lower grades who might be admitted, as individuals, to the manual arts courses of the upper grades. The fact that such courses are unrelated to the so-called *regular* work of the grade (an acknowledged weakness of such courses), serves, however, to make the above plan easily possible, and where it has been tried it has worked well.

It is probable too, that radical modifications must be made in the nature of the work done, especially for the less progressive children. For large numbers of our children the following of a logical, progressive course of exercises, even when these exercises are sugar coated by being embodied in so-called "useful models", will have far less value than the doing of real and necessary work for the home or, perhaps better, for the school. For such children the regular courses may serve as a starting point, but supplementary work of a different nature frequently proves more stimulating and suggestive. For example there are many boys who take little interest in working to the $\frac{1}{16}$ of an inch on a coat-hanger, or a flower-pin, who would work like beavers on making and putting up some playground apparatus, or in mending furniture brought from home, or in helping build a lumber closet in the end of the basement. While I have held this opinion for the past five years I am constantly surprised at the regenerating influence which the introduction of such practical work has on a class. There seems to be something in the feeling that one is meeting a real need which puts an altogether different aspect on the work. Our manual training has frequently been too much like arithmetic, or technical grammar, to appeal to boys and girls of the type about which I am now speaking. I can not help feeling that we have preached too much about "the dignity of labor", and have carefully excluded from our manual training practices everything which is really laborious. The models are too commonly "problems" and too rarely "jobs".

EDUCATION FOR REAL WORK.

It has been said frequently that our educational ideal is such that the school really trains children away from the home, the shop, and the farm. I seriously doubt whether some of our manual training has much in it that leads toward the industries. It is this that gives the semblance of sanity to the critics of our schools who maintain that industrial education if given at all, must be furnished by, and directed thru, other agencies than the public schools. It is obvious that this criticism must be met in some such way as above suggested.

There is one school system where 10 per cent of the manual training time of each pupil may be required for work on things needed by the city, and where special classes devote from five to ten hours a week in actual productive work. Such work unquestionably gives vocational guidance. Even if it guides away from industrial work of an uninteresting type it has value. There is one school where the work is organized on a factory basis, and while it seems something like play to the boys for a time, they generally reach the conclusion that they do not care to do that kind of work ten hours a day, six days a week, and fifty-two weeks in the year. This work has undoubtedly lengthened the school career of many a boy.

But you may ask me if, by this method, boys and girls are not being taught to hate work? I do not think so. They may be learning to hate deadly monotonous work, and I hope they are, but they are being taught that there is *thinking* back of all work for someone, and that their best line of progress is *thru* such work, and not around it, provided they must enter a factory, as undoubtedly many must. It is to those who *must*, and to those others on the border line who *may*, that the care of the practical arts teachers should be sympathetically given.

It is said that the very traditions of our educational institutions exercise a "guidance" away from manual work of any kind. It is my belief that this is the case, and that the teachers of the practical arts will do much to remedy this condition of affairs. By developing an interest in real work and by enabling children to experience joy in productive labor, these teachers will exercise a genuine "vocational guidance".

While others are trying to inspire the upper 15 per cent of our school children by proclaiming that there is "plenty of room at the top", let us say to the others, "Cheer up, there's plenty of room at the bottom". It is the struggle to get *way* to the top that is the curse of

our country and society today. A "top" *implies* a "base" and those who are destined to form the "base" of our social and economic structure should be just as precious in the eyes of the public school authorities as their more fortunate brothers and sisters. We should teach, we practical arts people, that there is room a long way this side of the top for success, for virtue, for service, and for all the things which make life worth the living. Because it has apparently been shaped for the few who can go to the top, our school system has been likened to a pyramid standing on its apex. It is time that we turned it over and you and I can help to do it.

Many changes will have to be made besides these in the courses of study, but one is perhaps more important than the rest and that is the modification of our views as to who should teach our boys and girls. Did it ever occur to you that many boys and girls who have made slender success of their school work have later in life learned from their employers and business associates more than the schools have taught the brightest? There is a lot of good teaching outside of the school and if some of those "teachers" were in our school faculties we should have fewer children leaving school as soon as the law allows. We professional teachers should remember that we have no monopoly on the ability to interest, guide, or instruct children. Larger and larger duties are being laid on the school every year and we should welcome to our fraternity new life and new knowledge and new blood from the outside world. I presume that you and I do not have much to do with the certification and appointment of teachers, but, so far as our influence is felt, we ought to show that we need and we want this addition to our ranks.

And so I believe that it is our special function and privilege to exercise a genuine vocational guidance by preaching the gospel of work and the dignity of workers. In literature, biography, history, and technology, we have ample opportunity of calling attention to the honorable, attractive, and indispensable part which work has had in the development of the race, and still holds in the training of American citizens.

THE A B C OF A PHILOSOPHY OF HANDWORK.[1]

FRANCOIS MENTRE.

Translated from the French by William T. Bawden.

JEAN JACQUES ROUSSEAU advised the young men of fortune of his day to learn a trade, for, said he, "A revolution is approaching, and the man who has a good trade will be well taken care of". To this reason, which one may wish to have expire by limitation, may be added the actual instability of fortunes and the increasing mobility of capital. But it is not in this strictly utilitarian view that the pupils of the new schools are initiated into practical work.

Independently of those considerations which relate to each kind of work in particular, there may be formulated certain general remarks concerning the process of culture; for it is, in fact, a question of culture. It seems to me that the conscientious practice of handwork of any kind brings with it a triple benefit; at the same time physical, intellectual, and moral.

In the first place (and this is the point on which I rely the least, because it is self-evident), the child learns to take care of himself with his hands, these admirable tools, the varied functioning of which has inspired the creation of instruments and machines. He acquires more facility of body, of hands and, so to speak, of tact. If he is naturally clumsy it corrects his native awkwardness; he learns not to pound on his fingers when driving a nail, and he learns how to adapt his movements to the effort demanded. On the contrary, if he is gifted he increases the power and precision of his activities. In various ways handwork brings about a natural gymnastic, which is salutary for health and favorable to the rythmical development of the body. I will add that it refreshes the mind and that it diverts the attention during the hours of digestion from matters that are purely intellectual and bookish.

For that very reason, and just in the measure that it diverts one from books, it is intellectually formative. For, in general, all our education is too symbolic and verbal; we instruct the child to handle

[1] Mentre: A B C d'Une Philosophie des Travaux Manuels; l'Education, A Quarterly Review of Home and School Education, published by Librairie Vuibert, 63 Boulevard Saint-Germain, Paris; Vol. IV, No. 4, December, 1912, pp. 504-506.

not things, but the signs of things. Practical work puts him in immediate contact with nature and with natural habits. In this view handwork is a permanent lesson in determinism and an incomparable school of science. Nature does not bend herself to all our fancies; she has laws which we are bound to observe if we would achieve our purposes. If we violate these laws she reminds us without consideration; she is an inflexible teacher who sanctions all our faults by a check. The teacher of French says to a pupil that his task is not well done, and he attempts to prove it to him; the pupil, perhaps, already has no doubt on this point; but he does not render an exact account of the causes of his failure nor of the remedies which are to be applied. The teacher of carpentry has no need to interrupt in order to show the learner that his joint "plays", that his taboret "wobbles", and that his measurements are inaccurate. Experience itself, often somewhat unpleasant, serves to indicate the defect and to correct the pupil. Handwork then offers an inestimable intellectual benefit; better even than science itself, it teaches the existence of laws and demands respect for them. Further, it requires quite early an elementary understanding of drawing, of descriptive geometry, even of physics and chemistry. Bookbinding, carpentry, forge-work may serve for the introduction to the teaching of drawing and of applied geometry. Will some one say this is *applied* drawing, *applied* geometry? So much the better, I will reply; for that drawing, for that geometry permits nothing that is arbitrary or that is "almost" right.

MORAL AND SOCIAL VALUES.

Handwork teaches the pupil to do well whatever he does, not to be satisfied with approximation; to execute his work carefully, in a finished and perfect manner; therein lies the moral efficacy of this work. If the learner derives from it this conviction that work half done is useless and even harmful, he will have transferred into a habit a fundamental pedagogical truth; I may say almost the only pedagogical truth. But, here as everywhere the personal profit is doubled by a social profit. At the same time that the young man learns to care for and to value the work of his hands he learns to love the artisans, his brothers. Experience at a trade dissipates rapidly the prejudice of inferiority that exists against handwork, a prejudice that is still too current among us in spite of the efforts of Diderot and the Encyclopedists. In conversing with an artisan the pupil observes that his

vocabulary is rich, precise, expressive; that his knowledge is profound, if not always extensive; finally, that his judgment is sound. A good artisan does not always know how to explain a thing but he can do it; which proves that he understands it perfectly. To repeat a comparison of M. de Rousiers, this workman who passes on the street with his bundle of tools has to deal, perchance, with intellectual matters more than a member of the Institute. After living the life of a workman for a time, how can the pupil fail to reach the point of understanding and respecting him? How can he fail to interest himself ultimately in his needs and in his kind? It is not necessary for this that his teacher of rhetoric comment on the beautiful sonnet by Sully Prudhomme, entitled "A Dream" (*Un Songe*).

Certainly I am far from pretending that all the pupils of the new school derive from practical work the triple benefit that I have just analyzed. That presupposes native dispositions that are too little common; it presupposes an application and a perseverance of which not all are capable. But all pupils derive some profit from it. Our age, which has its defects has also its beauty and its grandeur; the actual scope of decorative art seems to me to be one of its characteristics. On all sides we are attempting to revive the traditions of our old artisans who are at the same time artists. The word art designates the two things, in olden times inseparable.

Furniture making, bookbinding and printing, glass making and the other industries, are at this moment experiencing a profound revival. Our young people ought to associate themselves with this movement, which is bound to increase, which is already and which will become still more in France a source of richness and an artistic inspiration.

They ought to understand this movement, to encourage it by their patronage, and to participate in it themselves. Practical work furnishes to them the key to this prodigiously interesting world; this reason, by itself alone, would suffice to justify the place of handwork in modern education.

METALWORK WITH INEXPENSIVE EQUIPMENT FOR THE GRAMMAR GRADES AND HIGH SCHOOLS. XII.[1]

ARTHUR F. PAYNE.

ENAMELING.

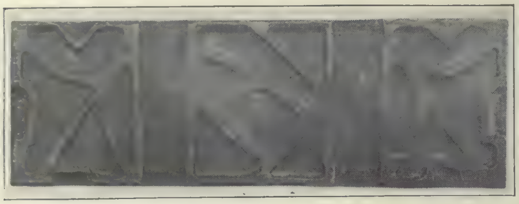
ENAMELING is a process the technical explanation of which is easily given and readily understood, and at the same time it is a process that taxes the patience and artistic skill of the experienced worker; but the result in its finished perfection of line, tone, and color is one that fully repays the necessary expenditure of time and patience.

Enamel is simply a delicate glass colored with various metallic oxides that is melted on to the metal, sometimes directly on to the surface but more often into a depression or cell prepared to receive it. There are four distinct types of enamel work, the "cloisonne," "champleve" sometimes called "basse-taille," relief and repoussé enamel; "plique-a-jour" or open cell enamel; painted or "limoges" enamel. The most common is the cloisonne which the Japanese have made so popular in this country. This is probably the oldest form of enameling, the ancient Egyptians, Greeks, and Romans having practiced it many years before Christ. The Byzantines were noted for their splendid cloisonne work in the fourth century. The most famous piece of cloisonne enameling in the world is the well known Alfred jewel that was made by order of King Alfred the Great, and was dug up at Athelney, England, where Alfred during his life time established a monastery.

The cloisonne, enclosed, or cell enamel work is made by drawing a design on a piece of metal and bending soft pieces of wire or thin flat strips of metal to the outline of the design and soldering them on to the metal with hard solder, thus forming a series of enclosures or cells into which the ground enamel is placed and melted. The first illustration of Japanese cloisonne shows the steps in the process. Number one is a piece of copper with the design drawn on; Number two has the design worked out in thin soft brass and soldered into place with silver solder; Number three has the first coat of enamel fused on; Number four has the second coat in place; Number five is turned over to show the back. It is sometimes necessary in large flat pieces to melt enamel on the back; this is to do away with any danger of

STEPS IN PROCESS OF "CLOISONNE" ENAMELING.

the enamel cracking from the unequal tension if the enamel was on one side only. If the enamel is in small cells and on thick metal this precaution is not necessary. In number five the cells have been roughly formed by soldering on a number of spirals without any attempt at a design. Number six shows the finished piece with the cells full and ground off level with the carborundum stone, and fired again to get the gloss finish. On small pieces "cloisonne" is not a difficult process, but care must be taken to use as little solder as possible as the zinc in the solder volatilizes with the successive firings of the enamel, the gas oozing thru the enamel leaving holes that are oftentimes difficult to fill satisfactorily.



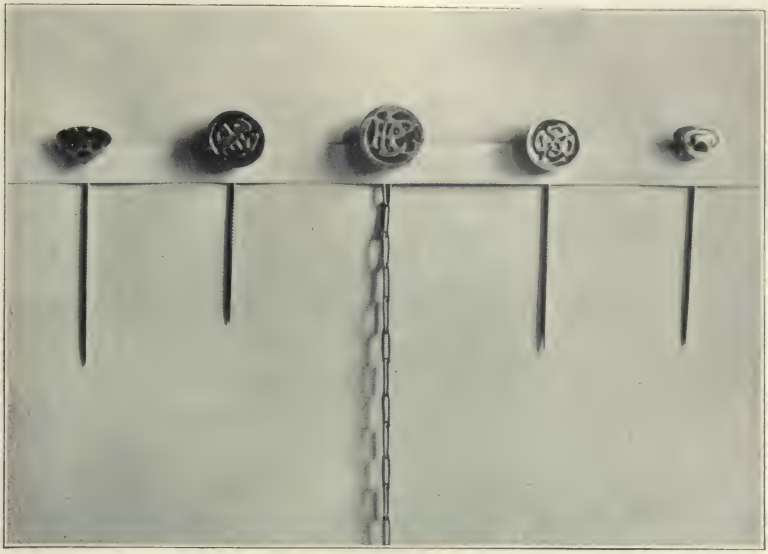
"CHAMPLEVE" ENAMELING: ETCHED CELLS READY FOR THE ENAMEL.

The "Plique-a-jour," open cell, or transparent enamelwork is made by building up a design of flat strips of metal without any back. The cells must be small enough to hold the enamel in place by capillary attraction while it is wet. The piece is fired in a muffle. This type is very difficult to make but it gives a very beautiful result. The design is outlined by the strips of metal with the light coming thru the enamel giving beautiful tones and graduations of color where the enamel is thick or thin.

The "Limoges" or "painted enamel" is another rather difficult type of enamel work. The metal plate for this work is curved convexly in the center to give it stiffness. A coat of black, white, or transparent enamel is melted all over the surface. The design is then painted on with vitrifiable colors, fired again, and finally covered over with a thin smooth coat of transparent enamel.

The "Champleve" enamel with its various modifications of "baisse-taille," relief, or repoussé is the easiest and best type of enamelling for the average worker to begin with. The cells in champleve enameling are made in various ways, they may be etched, sawn, or chased. The easiest method is to etch them into the surface of thick metal. No. 17 gauge B&S is about right. The photograph shows three hat-pins with the cells etched out ready for the enamel. The method of etching is the same as previously described except that it is necessary

to etch a little deeper, and it is better to etch a little slower than usual. The cells must be perfectly clean and bright before the enamel



"CHAMPLEVE" ENAMELING WITH ETCHED CELLS.

JAR COVER READY FOR ENAMEL; CHASED CELLS.

JAR COVER AFTER SECOND FIRING.

is put in. The third photograph shows a number of silver and copper tiepins with enamel in cells that are etched out. It is necessary to solder the pins on with soft solder, as the heat from the hard soldering

would discolor the enamel. The cells in some of the tiepins are only partially filled with enamel, this leaves the surface of the enamel concave which gives a graduation of color that is sometimes quite pleasing.

In the silver watch fob the cells were sawn out with the saws and saw-frame previously described. The design was transferred to a piece of twenty gage sterling silver and the cells sawn out. This piece was then soldered on to another piece of sterling silver, thus making cells of the sawn out design. The cells were filled with enamel which after firing was ground level with the carborundum stone and fired again for the final glazing.

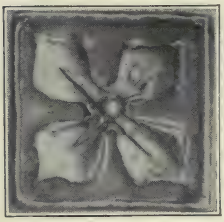
"CHAMPLEVE" ENAMELLING WITH SAWN CELLS.

In the case of the jar cover the cells were made by the chasing method. The cover was filled with chaser's pitch, then stuck on to the pitch block[2] and the design was outlined with the "tracers" and the cells were made by beating the metal down with the "planishers". This style of chasing is known as "recess" chasing and makes an easy and effective method of decoration in itself. The same cover is shown after two coats of enamel have been melted on. It is now ready for grinding level with the carborundum stone, and the final firing to obtain a smooth shiny surface. The illustration of the square box cover is another application of the chased cells. The chased silver hatpin is a further modification of chasing and enameling. When champleve cells are made and a design chased or carved in the bottom of the cell, the name bassetaille relief or repoussé is given to them. A transparent enamel is always used with this type, the design at the bottom being seen thru the enamel.

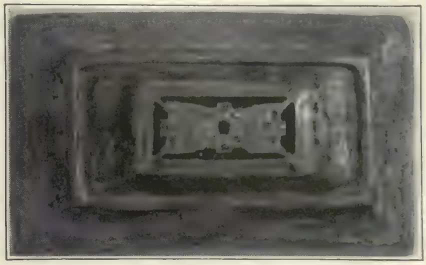
Etching, sawing, and chasing are the easiest methods of making the cells for the enamel. These having been described we will now

[2] See the February, 1913, number, p. 258.

begin a description of enamel and the methods of applying and firing it. As stated before enamel is a glass that is colored with metallic oxides, opaque white is colored with oxide of tin, cobalt blue with oxide of cobalt, yellow with oxide of uranium, green and turquoise with oxide of iron, violet and purple with oxide of manganese, and



CHASED SILVER HAT PIN WITH BACKGROUND OF BLUE ENAMEL.



SQUARE BOX COVER WITH ENAMELLED HANDLE.

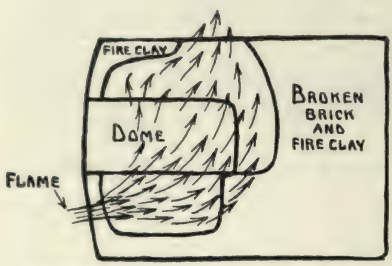
so on thru many various shades and colors. All colors may be obtained in opaque or transparent enamel. The enamel is bought by the ounce and comes in flat cakes about five inches in diameter and a quarter of an inch thick. The enamel is broken into small pieces with a hammer and ground to powder in a wedgewood mortar with the pestle.

MORTAR AND PESTLE, PIECES OF ENAMEL, SPATULA, AND CARBORUNDUM STONE.

A three inch mortar is plenty large enough for the beginner. (A mortar and pestle, pieces of enamel, a spatula, and a piece of carborundum stone are shown in the illustration.) It is best to have a little water in the mortar to stop the small pieces of enamel from

flying out. Do not pound the enamel, but place the mortar on a chair and make use of the weight of the body to grind the enamel.

After the enamel is ground about as fine as the finest salt, wash it by filling the mortar with water, allowing the enamel to settle; then pour off the water which will be somewhat milky in color, repeat this two or three times until the water is clear. Then fill the cells with the wet enamel, using the spatula as a spoon. The spatula is a piece of $\frac{1}{8}''$ square steel hammered to a spoon shape on one end and to a point on the other. When the cells are full tap the edge of the metal with the spatula, this will make any air bubbles come to the surface and will make the enamel settle down perfectly smooth. Care must be taken to fill the cells carefully and not to leave any enamel on the metal surface. Next apply the edge of a piece of soft blotting paper to the edge of the enamel, this will draw off the water.



INSIDE CONSTRUCTION OF HOMEMADE ENAMELING MUFFLE

The enamel is now ready for firing. Small pieces may be fired over a bunsen burner or any blue gas flame; the larger pieces requiring more heat may be done over the hotter blow-pipe flame. But in either case it is absolutely necessary that the flame should not come in contact with the enamel, as the flame will reduce the metallic oxide with which the enamel is colored, and spoil the color of the enamel. A twisted flattened bunch of fine iron wire is a good support for the piece while it is being fired. Heat the piece slowly until the moisture in the enamel is evaporated then hold the piece steadily in the flame until the enamel melts and glazes. Allow it to cool slowly as any sudden cooling is liable to crack the enamel. The enamel will have shrunk considerably in the firing and it will be necessary to fill the cells a second and perhaps a third time, if it is desired to have them full and level. If the enamel is to be flush and smooth with the surface of the metal it may be ground level with the carborundum stone wet with water, or with a smooth sharp file, then it is fired again to get the finish glaze. Sometimes the cells are first filled with a colorless transparent enamel, called "fondant" or "flux"; and the colored enamel applied as a second filling; this makes the color lighter and more transparent.

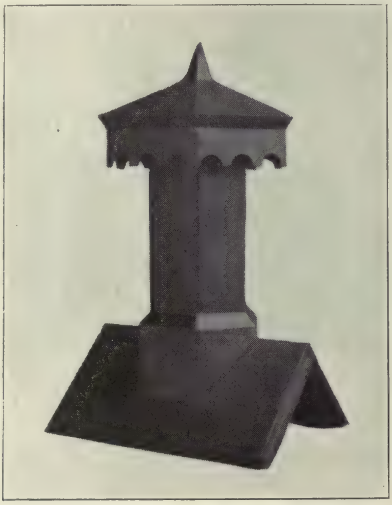
The pieces of enamel work that for any reason cannot be fired over the open flame of the bunsen burner or blowpipe may be fired in a muffle. A muffle is a furnace in which the flames pass around a clay dome in such a way that the dome and the work get red hot, but the flame does not touch the work. Muffles that are placed on

INEXPENSIVE HOMEMADE ENAMELING MUFFLE.

sale are expensive, the cheapest costing about $17.00 and they are also expensive to operate usually requiring about one hour to melt the enamel. However a perfectly satisfactory muffle may be easily made to use in connection with the blowpipe and foot bellows. The muffle shown is made from a two gallon oil-can, some broken brick and fire clay, and a clay dome that costs seventy-five cents, making a total cost of about $2.00. This home made muffle also costs less to operate, as it will get hot and melt the enamel in about fifteen minutes. The photograph together with the sketch shows the manner in which the muffle was made. If at any time it is desired to remove small pieces or specks of enamel, repeated applications of hydrofluoric acid will remove them.

It is always advisable to test the enamel before using it on any valuable piece of work as enamels are sometimes found the fusing point of which is higher than that of the metal it is to be melted on. I have had more uniform success with the enamels of the Chas. M. Robbins Co., Attleboro, Mass., altho Devoe and Reynolds; Drakenfeld & Co.; and the John Dixon Co., all of New York City, sell good enamels of various grades. Some enamellers mix a very small amount of borax or a little oxide of lead with enamel that does not melt readily. This is a convenient thing to know for use in exceptional cases, but enamels treated in this way are never so good; the best results are secured by buying good enamel and then testing before using.

(*To be continued.*)



SHEET-METAL WORK DONE BY BOYS AT STATE REFORMATORY, PONTIAC, ILLINOIS.

WHAT THE GRADUATE FROM THE EIGHTH GRADE SHOPWORK SHOULD KNOW.

JOSEPH BERG.

HOW much can you get out of a boy taking manual training in his last two years of elementary school?" I have often heard this question discussed and the thought came, "How much do you get into him?" In my experience, teaching freshmen in a technical high school, I am convinced that there is much left unsaid. I have been asked, not a few times, what in my opinion is fundamental in introductory woodwork, enabling the pupil to proceed with high school work without the usual necessity of going back to the "A, B, C" of the course. A brief review is advisable of course, but so much time is necessarily consumed by pupils learning the proper use of tools and equipment, economy in material and in general efficiency, that the year is half gone before we have really accomplished much work. Much of this is simple information the teacher takes for granted the pupil has learned before entering high school.

There is a move on foot in some technical schools to eliminate cabinet work from the first year, giving more attention to technique found in patternmaking and joinery. This is a step in the right direction for technique has been neglected in many places for want of quantity. Quality has often been forced out to make way for big showy exhibits of quantity. A teacher of piano demands correct technique from the beginning, realizing its value later in the course. Altho perhaps more trying at first to both pupil and instructor, it will more than repay later. If a shiftless method is practiced, a habit is formed which is hard and sometimes nearly impossible to correct. As an example—Let a boy commence using a brace, turning, say with the right hand, and in a few weeks ask him to use the left, then notice the confusion. Not that this is wrong, but has the question "which is proper," ever occurred? The gage is made to push or draw, but does the same boy do both? The boys, in a great many instances, are left to their own resources thereby getting an improper start and we find they are handicapped later thru force of habit.

I herewith mention what, in my experience, is found wanting in most cases. I believe many of these points are overlooked by teachers, but very often the time has been too limited to cover them. I should say that upon leaving the eighth grade or entering high school a boy who

has had, say two years of manual training, would be properly informed and make a good student if he knew:

How to read a rule (not ruler).
How to add and subtract fractions of an inch.
That sandpaper is graded numerically, the average being No. 1.
The correct method of tearing sandpaper.
That a block should be used when sanding flat unfinished surfaces.
That sandpaper should be torn into rectangular pieces to fit block.
That a sandpaper block should always be of soft wood.
That no sanding should be done until all tool work is finished.
That worn sandpaper becomes useful later.

To call a bit by name and size.
That a bit is not a bore.
That a bit is not a drill.
That the figure "9" on a bit means $\frac{9}{16}$ inch, not No. 9.
That a brace is not an "auger" or "borer."
That bits should never be filed on outside.
That bits should never be filed by pupils.
That direction should not be reversed when drawing out bit.
That a properly filed bit needs little pressure.
That holes are generally measured center to center.

That the use of a file be avoided wherever possible.
That a file when used cuts only one way.

That grinding without water heats to a blue and destroys temper.
That "sharpen" does not mean "grind."
Never use center of oilstone or grindstone for narrow tools.
That flat side of plane blade or chisel should never be ground.
That flat side of plane blade or chisel should never be raised when whetting.

To lay the plane on its side to avoid dulling blade and cutting bench.
That the cap iron, for benchwork, should be set about $\frac{1}{16}''$ from edge.
That a modern iron jack-plane is not a scrub-plane, as the old fashioned wooden one was.

That the plane should not be held diagonally, except when cutting across the grain.

That good work is impossible with dull tools.

That the scraper should be reserved for curly grained wood.
That the sharpening of a scraper should not be done by pupils.

How a rip-saw differs from a crosscut-saw.
That the number on a saw indicates number of teeth per inch.
That a rip-saw is not always numbered 8 and a crosscut-saw, 10.
That the back-saw be reserved for close work.
That it is necessary to have a line squared across two adjacent faces to cut off square.
That no time or labor is saved by sawing around the piece.

That a large chisel will do better work than a small one.
That chiseling across the grain is possible and correct in many cases.
That a mallet should not be used except for heavy duty.
To watch the chisel edge, not the handle, when using mallet.
That mallet or hammer should be held one-third the handle length from end.

That a bevel should not be called a "bevel square".
That gage and square are useless if not used properly.
That they should be held firmly against the work when testing or gaging.
That the gage point should be filed like a knife edge and should actually cut a line.
That the gage point should not project beyond $\frac{1}{16}$ inch.
That the gage should be tilted slightly in direction of motion.

That a screwdriver should never be sharpened like a wedge.
How to determine size of nail or screw.
That "12 D" means 12 penny and is about $3\frac{1}{2}''$ long, etc.
That screws have a gage (diameter) as well as length.
That screws should never be driven without first boring thru top piece.
That size of bit is determined by gage of screw.

What "toe-nailing" means.
That a nailset is not a punch.

That a handscrew is not a clamp.
How to adjust a handscrew.
That a vise will hold the work without placing entire weight on handle.
That Le Page's glue is only one kind of glue.
That "the more glue, the stronger" is a mistaken idea.
That a loose joint with much glue is weaker than a tight one with less glue.
That a thick glue is worse than none.

That shellac does not dry in half an hour as is generally believed, it merely sets.
That shellac must be thin and applied quickly.
That the work must not be handled the same day, if possible.
That wood filler is not intended to fill bad joints and ruts on surface.
That "Sawdust and Glue" is a poor workman's Motto.

WASTE PAPER BOX, MADE IN READING, PENNSYLVANIA, HIGH SCHOOL.

SHOPWORK AND MATHEMATICS FOR GRADE I.

James McKinney and Sarah M. Mott.

FOR several years the writers have been striving to find handwork for the little six year old child which would not alone be training for the hand but which would supply a deeper need and be a joy in the doing. The educative side has naturally been the uppermost thought in the teacher's mind but educative from the child's point of view rather than from the adult's. The things in which a child is interested out of school have been considered, and the making of such things has been introduced into the shopwork. The play interest being uppermost at this time, playthings are a large part of the shopwork. The little girl playing at housekeeping with mother, and the little boy eager to give father a helping hand in the jobbing about the house, have been happy in finding a possibility of carrying on these activities in the school. The teachers have tried to adapt the work presented in the following pages so that there may be a childish, rational, and educative working out of these desires.

Growth in concentration has also been another aim in all this work and for this purpose the objects made in the shop have been those requiring some time for completion. In the case of the play houses in particular this is obvious. While some of the smaller things such as tables and chairs may be finished in a lesson or two, the completion of the whole house is attained only after weeks of labor. This steady application to a definite line of work is a great factor in habit forming.

Nor have the ethical and social values of the shop been overlooked. Frequently members of the class are called upon to join forces in doing a piece of work, and adaptation and adjustment to the work and to one another make for social development. Many of the toys constructed are made for the definite purpose of giving them to some one else. This, as well as the fact that there are frequent chances for unselfish actions in choice of tools, material, etc., make for a growth in ethical living.

There is very little question today about the value of handwork for children; there is, however, a most varied opinion about the type of handwork best suited to the Primary School. Shopwork for Grade I has been as much discussed as mathematics for the same grade. The writers, however, after several years of successful work, are satisfied that no other form of handwork has a deeper-rooted hold on the

children's interest. Nor does any other subject call for better or more rational training in mathematics. The little wooden products of the shop are substantial toys and are cherished far more than the high priced ones bought at the stores.

The shop has furnished the real motor interest for the mathematics and enlivened the subject often considered so difficult for the young mind to grasp with any sense of its usefulness or importance.

NATURE OF THE BENCHWORK.

In all the benchwork the measuring is confined to $\frac{1}{2}''$ and $1''$ divisions. The benchwork consists of planing edges to width, cutting pieces to lengths which do not exceed $3''$ in width or $\frac{7}{8}''$ in thickness, (the $\frac{7}{8}''$ pieces being only $1\frac{1}{2}''$ wide), nailing, and sandpapering.

The tools used are a pencil, ruler, block-plane, back-saw, hammer, sandpaper, a brace and bit (in one model), and occasionally a miter-box.

The children work at the same benches which are used in all our school work, and the adjustment for height is made by the children standing on a platform.

When the children enter school in the fall, one of the early lessons is bulb planting. The necessity of marking each child's pot is recognized and immediately becomes a motive for the first piece of shopwork, which is *a plant label.*

The stock used to make the label, Fig. 1, is a piece of whitewood $\frac{1}{8}''$x$1\frac{1}{2}''$x$7''$, rough sawed. The children are asked to run their fingers over the piece of wood. Questions are asked about it; answers as "it feels rough", etc., are received. Pieces of sandpaper and sandpaper blocks are distributed. The class is shown how to smooth the two broad sides of the board, and test for smoothness by touch. The narrow edge is smoothed by planing. (Very little demonstration is really needed for this work as the children are so keenly interested in the process.) Before beginning any measuring work, the teacher has found it advisable to test the children's knowledge about their rulers. The ruler used has $1''$ and $\frac{1}{2}''$ divisions; use of a board which is converted into an improvised ruler having division similar to the one used in class, has helped greatly in the demonstration.

The measuring or layout of the label is now taken up. A finished label is shown and a drawing of the board given to the children is put on the blackboard, one line is made straight to represent the planed

edge. The size of the label is given, and 1″ wide and 6″ long is written on the drawing. By the use of the blackboard the class is now taught how to measure. The end of the ruler is placed vertically even with the straight line of the blackboard drawing and one inch is

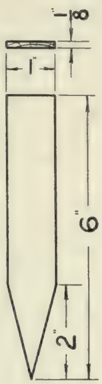


Fig. 1.
Plant Label.

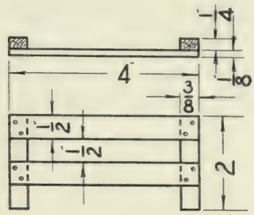


Fig. 2.
Section of Fence.

measured across the drawing and a mark made; this is repeated near the other end. A horizontal line is drawn thru the points. The children then go to work and lay out their boards following the above example. Holding the ruler even with the planed edge is the important point, and it is a good plan to have the children watch the teacher hold the ruler and board various ways and get them to find out why it is important to have the ruler perfectly even with the planed edge. The board is now planed down to the line. The length (6″) is measured off by the same method, the ruler being held horizontally.

Sawing off to length is the next step. The work should be held in a bench-vise, or placed on a bench-hook. The lay-out of the pointed end is as follows:—Two inches are measured along one edge from the end; and repeated on the opposite edge. The center is marked by sight. A line is drawn from the marks at the edges to center point on the end. The point is shaped by planing.

This method of measuring by the use of parallel points is repeated in all the work. No try-squares are used.

Our own fall planting next leads us to observe the farmer's preparation for winter. The sand table is converted into a farm and the fields are fenced in. These fences are the second piece of shopwork and their construction calls for more mathematics.

The stock for the farm fences is given in long strips: $\frac{1}{8}''$x$\frac{1}{2}''$, and $\frac{1}{4}''$x$\frac{3}{8}''$. A strip is given to each child and made smooth by sandpapering. Two rails, 4″ long, and two posts 2″ long are marked and cut off, using saw and bench-hook. After all the children have a number of pieces cut off, a demonstration of nailing is given. After the sections of fence are made, Fig. 2, the mathematics lesson may be as follows:

How many rails did you need for one piece of fence?

How many rails did you need for two pieces of fence?

How many nails are used in one piece of fence?

How many nails are used in any given number of pieces?

How many sections of fence are needed to fence in a field 8″ long x 4″ wide? 12″ long and 8″ wide? 8″ long and 8″ wide, etc.

And for the child who has a mathematical mind—What are the dimensions of a field which needs 12 sections of fence?

Some questions involving labor may arise if the class is mature enough; such as—If it takes one hour to make a section, how long will it take to make a given number of sections? If it takes 2 hours?

The farm work is particularly well adapted to children at this time of year as the fence making is extremely simple and while the less efficient children make fences, some of the more able children make more difficult things such as farm-house, barn, chicken-coops, drinking-trough, etc. Then the question may be asked, "Which is more difficult to make, house or fence?" "Which man should be paid more, the one who builds fences, or the one who builds houses?"

MAKING THE CRATES.

It is the custom of the Ethical Culture School to make Thanksgiving donations to hospitals, nurses' settlements, and various poor families. Crates are needed in which to pack many of these donations and the First Grade makes crates for several of the older grades as well as for themselves. See Fig. 3.

Size:—8″x10″x2′ for slats and side. The stock is given as follows: *ends,* actual size, $\frac{5}{8}''$x8″x10″; *slats,* $\frac{3}{8}''$x$2\frac{1}{4}''$x2′1″. The finished size of slat is $\frac{3}{8}''$x2″x2′.

FIG. 3. THE PUPILS OF THE FIRST GRADE MAKE CRATES FOR SEVERAL OF THE HIGHER GRADES AS WELL AS FOR THEMSELVES.

The measuring and planing repeat the work done on the plant label. This work by contrast is much larger and gives exercise for the fundamental muscles of the body. Two $1\frac{1}{4}''$ nails are used in each end of each slat. From these large crates, the following questions arise:

How long is this slat?
How wide is this slat?
How many slats on top of crate?
How many slats on bottom?
How many slats on top and bottom together?
How many slats on one side?
How many slats on top, bottom, and one side?
How many slats on other side?
How many slats on top, bottom, and both sides?
Each slat has how many nails? (4)
How many nails have two slats?
How many nails have four slats, etc.? Some children count all the nails.

Following the oral work the teacher writes the formal facts as they are derived on the blackboard, always writing answer:

4	4	4
4	4	4
—	4	4
8	—	4
	12	—
		16

Then the class sometimes make a smaller crate which they fill with candy and give for a Christmas present. The candy is made of confectioner's sugar and also furnishes a mathematics lesson.

The size of the small crate is $2''$x$3''$x$4''$. Stock is given as follows: *ends,* $\frac{3}{8}''$x$2\frac{1}{4}''$x$7''$; *slats,* $\frac{1}{8}''$x$\frac{1}{2}''$ any length. The piece for the ends is measured and planed to width, then measured and sawed off to length. Slats are sanded smooth, measured for length, and cut off. One nail is put in end of each slat. These crates have three slats on top, 3 on bottom, and 2 on each side. From these arise such questions as; Describe your crate. Length and width of slats; number on top, bottom and sides. Dimensions of ends. The following formal facts are derived and written:

2	3	2	2
2	3	3	3
—	—	—	2
4	6	5	3
			—
			10

The candy is made in the cooking class and may easily be made in any schoolroom. The teacher prepares the *fondant* beforehand—$\frac{1}{4}$ of this is colored pink, $\frac{1}{4}$ yellow, $\frac{1}{4}$ orange, and $\frac{1}{4}$ remains white. Each part is usually flavored differently. Each child is given a piece of each color. He is also given 4 halves of English walnuts, 8 cloves, and 8 small pieces of citron. He takes one portion of the fondant, let us say the pink. He divides it in half; each half in half again (quarters) so that he has four pieces. He then rolls each little pink piece into a ball making candy apples, using clove for blossom end and citron for stem. The yellow is used in the same way excepting that pears instead of apples are made. The orange is converted into oranges, while the white is made into four flat pieces upon each of which a half of walnut is pressed. The child then has sixteen candies, four of each kind, and the previous lesson of $4+4+4+4=16$ is recalled. Sometimes the cost is computed but not usually, as the thought of giving of one's labor is usually emphasized in the Christmas gift.

THE PLAY HOUSE.

This, the largest piece of work of the year, is begun immediately after the holidays and is usually completed about Easter.

Each child is given a small packing box (the size used is 12″ deep, 10″ high, 19″ long) which he may transform into a sitting-room, dining-room, bed-room, kitchen, store, theatre, post-office, or stable, as he desires. See Fig. 4. It is best to have the boxes uniform in size in order to simplify class directions. The boys of an older grade cut out the windows and then the rough box is given the little child. He planes the box, making it smooth. He then frames the windows as follows, see Fig. 5:

Stock for window frames: $\frac{1}{8}$″x$\frac{5}{8}$″, any length, (top and side pieces); $\frac{1}{4}$″x$\frac{1}{2}$″, any length (sills). The pieces are smoothed up in the strip and then measured off to the required lengths: four side pieces, 5″ long; two top pieces, 4″ long; two sills, 4″ long. A drawing of the window is put on the blackboard and sizes are written out, as 5″ long, etc. The cutting off is done on the bench-hook with the back-saw.

After framing the windows, the child paints the outside of the "house" as it now becomes, and also stains or paints the floor. If a "store", he paints the entire inside a light color.

Questions on the windows are as follows:

How long are the side pieces of the window frames? (5")

How long must a piece of board be out of which to cut enough sides for one window? For both windows? For windows for two houses, three houses, or any given number of houses? (In this way children learn to count by 5's).

How long are the tops of the window-frames? (4"). Then follow questions similar to the ones given above.

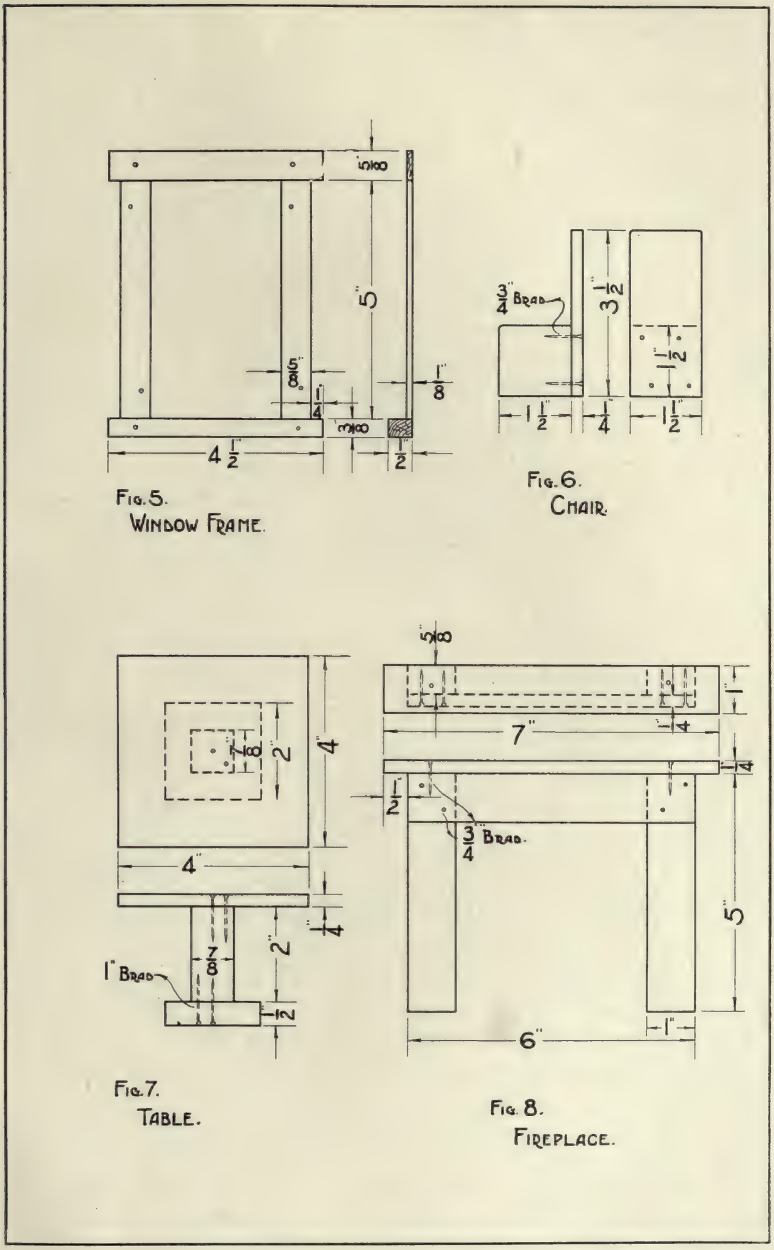
FIG. 4. THE PLAY HOUSE. BED-ROOM.

How many window sills on one window? How many on both windows? On any given number of windows?

How many nails in each piece? In each window? In both windows?

Formal work arising from this is as follows:

1	4	5	5	10	2	2	8
1	4	5	5	10	2	2	8
—	—	—	5	—	2	2	—
2	8	10	5	20	2	2	16
			—		—	2	
			20		8	2	
						2	
						2	
						—	
						16	



FIGS. 5, 6, 7, AND 8.

These facts are also written on the blackboard with answers. The class has now learned the doubles of numbers as follows:

1	2	3	4	5	8
1	2	3	4	5	8
—	—	—	—	—	—
2	4	6	8	10	16

These as well as the other facts previously stated are drilled upon from time to time in the manner familiar to every experienced first grade teacher.

The class has also learned to count by 1's, and things in the schoolroom are frequently counted:—children, desks, chairs, pencils, erasers, papers, etc. A counting game is often played, counting by 1's, 2's, or 5's, one pupil beginning where another leaves off. After a little while the class is ready to put the facts known orally into this form:

1	2	8	12	
1	1	1	1	etc., indefinitely.
—	—	—	—	
2	3	9	13	
2	4	6	8	
2	2	2	2	etc., to 20 or more.
—	—	—	—	
4	6	8	10	
5	10	15	20	
5	5	5	5	
—	—	—	—	
10	15	20	25	etc.

And now begins the making of furniture for the house. The entire class makes at least two chairs. This is a good point of departure as by the time the chairs are finished, the children are capable of doing the more independent work which the furnishing of the various houses requires. The children gain decided power thru this independent work.

Stock for chair, Fig. 6, *seat* $1\frac{1}{2}''$x$1\frac{1}{2}''$x$1\frac{1}{2}''$; or $1\frac{1}{2}''$x$1\frac{1}{2}''$, any length to be cut off by the children. This can easily be done by the help of a miter-box. *Back,* $\frac{1}{4}''$x$1\frac{3}{4}''$ any length.

MAKING OF CHAIR.

The seat blocks are sanded smooth. The backs are measured $3\frac{1}{2}''$ long, and cut off, (the board being held flat in the tail vise), then measured for width and planed to size.

Assembling of Chair:—A careful demonstration of nailing is given, bringing out the causes of splitting, etc. The method given is as follows: The back is placed on seat and position of nails marked with a pencil. The back is now laid on the bench and one of the lower nails driven in part way. The seat is now held firmly in the vise and the back nailed on. Before the second nail is put in the final adjusting of the back should be made.

Stock for Table, Fig. 7:—*Top,* $\frac{1}{4}''$x$4\frac{3}{8}''$x$4''$; *pillar,* $\frac{7}{8}''$x$\frac{7}{8}''$, any length, or $\frac{7}{8}''$x$\frac{7}{8}''$x$2''$; *base,* $\frac{1}{2}''$x$2\frac{1}{2}''$, any length.

MAKING OF TABLE.

Top. One edge of the top is planed smooth, (the children being cautioned about planing too much off this first edge). Then measured off to width (4″) and planed to size.

Pillar. The four sides of the piece of wood are made smooth by sandpapering, then measured off to length (2″). The sawing of this piece is done in a small miter-box, as the ends are required to be nearly square if the table is to stand properly.

Base. One edge is planed smooth, then measured to width. Length of piece is now measured (2″) and cut off (the board being held in the vise).

Assembling. The center of the top is found by drawing the diagonals. At the intersection of the lines a 1″ nail is driven in till the point shows thru on the other side. The nail point is placed on the center of the end of the pillar and then the nail is driven "home". A second nail is put in to keep the top from turning. The base is attached by the same method.

Stock for Fire-Place, Fig. 8:—*Jambs,* $\frac{5}{8}''$x$1\frac{1}{8}''$x$11''$ (for two pieces); *breast board,* $\frac{1}{4}''$x$1\frac{1}{4}''$x$7''$; *top,* $\frac{1}{4}''$x$1\frac{1}{4}''$x$8''$.

(*To be continued.*)

REPORT OF A COMMITTEE ON MECHANICAL DRAWING FOR HIGH SCHOOLS. II.[1]

FRED D. CRAWSHAW AND J. D. PHILLIPS.

B. PENCILING. Emphasis placed on accurate pencil mechanical drawing. Omit dimensions, dimension lines, and extension lines in the following preliminary work in penciling.

1. Rectangular objects.

a. *Demonstration.* Pencil drawing from orthographic sketch A1a. Explain pencil layout. The correct use of the tools should be clearly and fully shown and explained. The construction of the square and rectangle may be presented at this point.

b. *Classroom work.* Pencil mechanical drawing of sketches A1a and A1b.

c. *Home work.* Pencil practice in freehand lettering.

2. Objects having inclined faces.

a. *Demonstration.* Pencil drawing from orthographic sketch. A2a. The construction of the triangle, hexagon, and octagon may be presented at this point.

b. *Classroom work.* Pencil mechanical drawings of sketches A2a and A2b.

c. *Home work.* Pencil practice in freehand lettering.

3. Objects having circular edges.

a. *Demonstration.* Pencil drawing from orthographic sketch A3a.

b. *Classroom work.* Pencil mechanical drawings of sketches A3a and A3b.

c. *Home work.* Pencil practice in freehand lettering.

4. Objects having tangent edges.

a. *Demonstration.* Pencil drawing from orthographic sketch A4a.

b. *Classroom work.* Pencil mechanical drawing of sketches A4a and A4b.

c. *Home work.* Pencil practice in freehand lettering.

C. INKING. The classroom work in divisions 1, 2, 3, and 4 to be inked on paper. The classroom work in divisions 5, 6, 7, and 8 to be inked on tracing cloth. Omit dimensions, dimension lines, and extension lines in the following preliminary work in inking.

[1] Part I appeared in the April, 1913, number.

1. Rectangular objects.

a. *Demonstration.* Ink the pencil mechanical drawing made from the sketch A1a. The correct use of tools should be clearly and fully shown and explained. Pupils should never be left to find out for themselves the proper use of a tool.

b. *Classroom work.* Ink the pencil mechanical drawing made from the sketch A1a.

c. *Home work.* Ink practice in freehand lettering on tracing cloth.

2. Objects having inclined faces.

a. *Demonstration.* Ink the pencil mechanical drawing made from the sketch A2a.

b. *Classroom work.* Ink the pencil mechanical drawing made from the sketch A2a.

c. *Home work.* Ink practice in freehand lettering on tracing cloth.

3. Objects having circular edges.

a. *Demonstration.* Ink the pencil mechanical drawing made from the sketch A3a.

b. *Classroom work.* Ink the pencil mechanical drawing made from the sketch A3a.

c. *Home work.* Ink practice in freehand lettering on tracing cloth.

4. Objects having tangent edges.

a. *Demonstration.* Ink the pencil mechanical drawing made from the sketch A4a.

b. *Classroom work.* Ink the pencil mechanical drawing made from the sketch A4a.

c. *Home work.* Ink practice in freehand lettering on tracing cloth.

5. Rectangular objects.

a. *Demonstration.* Trace the pencil mechanical drawing made from the sketch A1b. Explain why tracing cloth is used.

b. *Classroom work.* Trace the pencil mechanical drawing made from the sketch A1b.

c. *Home work.* Ink practice in freehand lettering on tracing cloth.

6. Objects having inclined faces.

a. *Demonstration.* Trace the pencil mechanical drawing made from the sketch A2b.

b. *Classroom work.* Trace the pencil mechanical drawing made from the sketch A2b.

c. *Home work.* Ink practice in freehand lettering on tracing cloth.

7. Objects having circular edges.

a. *Demonstration.* Trace the pencil mechanical drawing made from the sketch A3b.

b. *Classroom work.* Trace the pencil mechanical drawing made from the sketch A3b.

c. *Home work.* Ink practice in freehand lettering on tracing cloth.

8. Objects having tangent edges.

a. *Demonstration.* Trace the pencil mechanical drawing made from the sketch A4b.

b. *Classroom work.* Trace the pencil mechanical drawing made from the sketch A4b.

c. *Home work.* Ink practice in freehand lettering on tracing cloth.

D. FREEHAND LETTERING. Start lettering work at the beginning of the course. Have the class use only upright capital letters and numerals until division G is reached. Beginning with division G use inclined capital and lower case letters and numerals. Continue the practice on upright capitals and numerals thruout the course. Letters to be inked should not be penciled. Letters $\frac{3}{16}''$ high. The letters and numerals should be considered in the following order: I L T H F E Z N M A V W K X Y U J O Q C G D P R B S 4 7 2 5 3 0 6 9 8.

1. Pencil work. This work should be done with a 2H pencil on regular drawing paper.

a. *Demonstrations.* Analyze three or four letters or numerals each class period. Consider form, direction of strokes, and spacing.

b. *Classroom work.* Practice the letters considered in D1a. Short practice periods of from 10 to 15 minutes in length are recommended.

2. Ink work. Tracing cloth is recommended for the practice work in ink.

a. *Demonstrations.* Composition and titles. A short demonstration each period.

b. *Classroom work.* Practice the work presented in the above demonstration. Short practice periods continued.

E. FREEHAND PERSPECTIVE. Use blank paper.

1. Rectangular objects.

a. *Demonstration.* Use the cube as a measure unit in making a perspective drawing of some simple rectangular object. Use the object, and freehand perspective and orthographic sketches. Object suggested, butt-joint box.

b. *Classroom work.* Make a perspective sketch of a similar rectangular object to an enlarged scale. Object, orthographic sketch and perspective sketch furnished. Object suggested, oilstone box.

c. *Home work.* Furnish each pupil with orthographic sketches of a number of simple rectangular objects usually found in the home, preferably not those for which perspective sketches have been furnished.

2. Objects having inclined faces.

a. *Demonstration.* Use object, orthographic and perspective sketches and measuring devise. Object suggested, wall bracket with rectangular top and back and single triangular brace.

b. *Classroom work.* Make a perspective sketch of a similar object. Object and orthographic sketch furnished. Object suggested, flower box with sloping sides.

c. *Home work.* Furnish each pupil with orthographic sketches of a number of objects having inclined faces, preferably not those for which perspective sketches have been furnished. Objects usually found in the home should be selected.

3. Objects having circular edges.

a. *Demonstration.* Use object with curved edges, preferably circles or semicircles. Use object, orthographic and perspective sketches, Develop the ellipse measure. Show relation of axes in circle perspective. Object suggested, cylindrical cup.

b. *Classroom work.* Make a perspective sketch of a similar object. Orthographic sketch furnished. Object suggested, flower pot.

c. *Home work.* Furnish each pupil with orthographic sketches of a number of objects having circular edges, preferably not those for which perspective sketches have been furnished. Objects usually found in the home should be selected.

4. Objects having tangent edges.

a. *Demonstration.* Use object, orthographic sketch and perspective sketch. Object suggested, pen-tray used in A4b.

b. *Classroom work.* Make a perpsective sketch of a similar object. Orthographic sketch furnished. Object suggested, bread-board.

c. *Home work.* Furnish each pupil with orthographic sketches of a number of objects having tangent edges, preferably not those for which perspective sketches have been furnished.

WORKING DRAWINGS.

Objects should be selected having parts which will make it possible to introduce conventions in approximately the following order:

Object lines; full lines, dotted lines.
Dimension lines; linear distances, diameters, radii, angles.
Extension lines.
Arrowheads.
Foot and inch marks.
Drilled holes; representation, size.
Tapped holes; representation, size.
Crosshatching.
Broken sections; shafts, etc.
Bolts and nuts.
Screw threads.

F. Dimensions and Conventions. The preliminary work in lettering should be completed before this work is started. The objects selected for the following work should be more complex than those previously used.

1. Objects having plane surfaces.

a. *Demonstration.* Dimension and extension lines. Arrowheads. Use object and freehand perspective and orthographic sketches. Explain the blueprinting process. Object suggested, taboret, stool or similar object being made in the shop at this time.

b. *Classroom work.* Make a freehand orthographic sketch, pencil mechanical drawing, tracing, and blueprint of a similar object. Dimensioned freehand orthographic sketch furnished. Object suggested, small piece of furniture similar to stool or taboret.

c. *Home work.* Place the dimensions on the orthographic sketch A1c and A2c.

2. Objects having curved surfaces.

a. *Demonstration.* Dimension and extension lines. Use object and freehand perspective and orthographic sketches. Object suggested, small piece of furniture with curved surfaces.

b. *Classroom work.* Make a freehand orthographic sketch, pencil mechanical drawing, tracing and blueprint of a similar object. Dimensioned freehand perspective sketch furnished. Object suggesetd, object similar to the one used in the above demonstration.

c. *Home work.* Place the dimensions on the orthographic sketches A3c and A4c.

Note:—If any consideration is to be given to the planes of projection it should be done at this point.

G. Oblique Views. Conventions continued.

1. Objects having plane surfaces.

a. *Demonstration.* Positions of oblique views. Use simple object in an inclined position.

b. *Classroom work.* Make a pencil mechanical drawing and tracing of a similar object. Freehand orthographic sketch not including the oblique view furnished. Simple object in an inclined position.

c. *Home work.* Having given two orthographic views of an object to find an oblique view. Furnish class with the given views.

2. Objects having curved surfaces.

a. *Demonstration.* Methods of drawing oblique views of curves. Use of irregular curve. Object suggested, 45° V pipe fitting.

b. *Classroom work.* Make a pencil mechanical drawing and tracing of a similar object. Freehand orthographic sketch not including the oblique view furnished. Object suggested, 45° elbow or angle pillow block.

c. *Home work.* Having given two orthographic views of an object to find an oblique view. Furnish class with the given views.

H. Sections and Developments. Conventions continued.

1. Objects of prismatic or cylindrical form.

a. *Demonstration.* Sections and developments. Object suggested, three-part pipe elbow. Demonstration developed from view showing pipe joints as straight lines. Find one other view and develop patterns of two dissimilar parts. Explain also the solution of the problem assuming that the pipe is prismatic instead of cylindrical in form.

b. *Classroom work.* Make a dimensioned pencil mechanical drawing and tracing of a four part pipe elbow. Draw at least two views and the developments of dissimilar parts. Freehand orthographic sketch of view showing pipe joints as straight lines furnished.

c. *Home work.* Make a freehand orthographic sketch (including developments) of a similar hexagonal pipe elbow.

2. Objects of pyramidal or conical form.

a. *Demonstration.* Sections and developments. Object suggested, funnel. Explain method of finding the patterns for the surfaces of an ordinary funnel. Explain also solution assuming that the funnel is cut obliquely.

b. *Classroom work.* Make a working drawing of a similar object. Freehand orthographic sketch furnished. Object suggested, sprinkling

can spout. Assume that the large end of spout is cut obliquely by a plane.

c. *Home work.* Make a freehand orthographic sketch (including development) of a pyramidal-shaped funnel cut obliquely.

I. Intersections and Developments. Conventions continued.

1. Intersections of W. Right circular cylinders.
   X. Regular prisms.
   Y. Cylinder and prisms.

a. *Demonstration.* Intersections and developments. Object suggested, sheet metal pipe T. Explain method of finding intersection and pattern when pipes are of different diameters. Explain also the solution of the problem when one or both of the pipes are prismatic in form.

Note:—Demonstration should include the solution for a pipe Y if it is desired to consider oblique intersections.

b. *Classroom work.* Make a dimensioned pencil mechanical drawing (including patterns) of a pipe T when one of the pipes is prismatic in form. See case Y above.

c. *Home work.* Make a dimensioned orthographic sketch (including patterns) of a pipe T when both of the pipes are prismatic in form. See Y above.

2. Intersection of W. Cylinder and cone.
   X. Cylinder and pyramid.
   Y. Prism and cone.
   Z. Prism and pyramid.

a. *Demonstration.* Intersections and developments. Object suggested, a conical hopper opening into a cylindrical conveying machine. Explain method of finding intersection and patterns when the axes of conical and cylindrical parts intersect at right angles. Explain also the solution of the problem when the conical part is pyramidal or the cylindrical part is prismatic in form.

Note:—Demonstration may include the intersections and development when the parts intersect at other than right angles.

b. *Classroom work.* Make a pencil mechanical drawing (including patterns) of a pyramidal hopper entering a cylindrical conveyor at right angles. See case X above.

c. *Home work.* Make a dimensioned orthographic sketch (including patterns) of a conical hopper entering a prismatic conveyor. See case Y above.

J. Detail and Assembly Drawing. The best application of a course in mechanical drawing, as it will be used in commercial practice, is in detailed and assembled machine parts. The division

of the course, here outlined is therefore reserved for the last to serve as a review of all former divisions and to prepare directly for drafting room practice.

1. Detail drawing.

a. ***Demonstration.*** Purpose of detail drawing. Its relation to assembly drawing. Arrangements of groups of views. Grouping of parts depending upon shop operations under different shop conditions. Objects suggested, lathe head-stock, lathe tail-stock. Small pump.

b. *Classroom work.* Freehand orthographic sketch, pencil mechanical drawing, tracing, and blueprint of the details of an object having not more than six dissimilar parts. The object used in the demonstration should not be assigned for classroom work.

c. *Home work.* Freehand orthographic sketches of the details of a monkey wrench.

2. Assembly drawing.

a. *Demonstration.* Purpose of assembly drawing. Drawing room practice. Use object selected for demonstration J1a.

b. *Classroom work.* Freehand orthographic sketch, pencil mechanical drawing, tracing and blueprint of the assembled parts of the object selected for J1b.

c. *Home work.* Freehand orthographic sketch of the assembled parts of a monkey wrench.

K. Isometric and Cabinet Projection. Only a limited amount of this work is recommended.

1. Isometric projection.

a. *Demonstration.* The principles of isometric projection. Use a simple object having a combination of straight lines and circles.

b. *Classroom work.* Make a pencil mechanical drawing of an object similar to the one used in the above demonstration.

2. Cabinet projection.

a. *Demonstration.* The principles of cabinet projection. Use a simple object having a combination of straight and circular edges.

b. *Classroom work.* Make a pencil mechanical drawing of an object similar to the one used in the above demonstration.

EDITORIAL

AT its recent meeting in New York City the Eastern Art and Manual Training Teachers' Association adopted the report of a committee which had for several months been making a careful study of the problem of revision of the Constitution and By-Laws of the Association. The work of the committee included a critical examination of the organization and methods of administration of a number of other associations.

Awakening of Manual Arts Organizations

The most significant change proposed was the creation of a board of directors in which is to be centralized the responsibility for the conduct of the Association's affairs. The composition and the duties of this board are modeled after the general scheme in use in a number of the more successful technical and scientific societies. Permanence in policy, efficiency in administration, and progress in development are sought to be secured by the election to this board each year, one or two members to serve for terms of three to five years. Each individual thus elected to a place of authority and responsibility remains in it long enough to learn something of the nature of the duties to be performed, to acquire from others similarly situated a vital interest in the professional welfare of the Association, and to achieve something in the way of influencing and directing the development of progressive policies. In the course of years these individuals will return to private life, as it were, to inoculate the rank and file of the membership with a spirit of intelligent enthusiasm for the work of the Association.

A plan similar to that adopted by the Eastern Association has been in operation during the past year in the Western Drawing and Manual Training Association, during which time the Council, as it is called, has considered a number of interesting and important problems. It may be appropriate to refer briefly to one of these for the suggestion that it contains for other organizations.

The Council, at the recommendation of certain members of the Association, has been making a definite study of the possibility of developing a form of program that shall meet the needs of the Association in the highest possible degree, and one whose main features might

remain unchanged from year to year in order that the members might become accustomed to its arrangements and possibilities. In some years the sessions of the convention have extended from Tuesday to Friday, in others from Monday to Thursday or Wednesday to Saturday; at some conventions a solid program has been provided that left no time free for study of the exhibits, while others have made such provision; some programs have arranged the round table discussions at different hours, so that the member who wished might attend both the art and the industrial education discussions, for example, while in other programs all the departmental sessions were set at the same hour.

The Council set itself the somewhat ambitious task of attempting to formulate a plan that would appeal to the largest possible number of those interested. Do most of the members find it easier to adjust their home work so as to be absent the latter half of the week, or the earlier? Would most of the members prefer an arrangement of the departmental sessions at the same hour, with the consequent opening up of at least one afternoon which might be left free for study of exhibits, meetings of committees, etc? Would it be possible to secure a more general participation in the conduct of the affairs of the Association by placing the annual business meeting at some other time than the traditional closing session of the convention? These are some of the questions that have been carefully considered. The resulting program was presented at the Des Moines meeting with the expectation that its working would be carefully and critically observed by the Council, the program committee, and the members of the Association generally . The results, without doubt, will be of much interest.

Possibility of the Survey Idea

The study referred to very briefly in the preceding paragraphs is but one of a number that are engaging the attention of the leaders in these two Associations. It certainly seems appropriate to see in these activities evidence of an awakening to a new sense of the opportunities and responsibilities confronting the workers in these fields. The one feature of the educational situation that seems to impress the administrator most forcibly is the fact that the manual arts, along with other new types of work, are not so completely organized and systematized as the older forms that have been taught for generations. We are only beginning to have text-books and standards, whereas Latin and mathematics have been in a thoroly organized form for years. There are, of course, advantages in this as

well as disadvantages, and they cannot be discussed here. The important thing is for the workers to realize the significance of the fact that affairs are in a state of evolution, and the importance of real study, and attitude of open-mindedness, and individual contribution to progress on the part of every one.

Another evidence of professional alertness is to be seen in the report, recently prepared, by a committee of the Wisconsin School Arts and Home Economics Association, which appears on another page of this number. A reading of this report would be a good thing to prescribe for a sluggish executive committee, or program committee, in almost any of our Associations. Without discussing it in detail, it may be submitted that the knowledge of its own field which is suggested by this report is one of the necessary presuppositions of intelligent and purposeful activity on the part of any organization. Why should not every Association of teachers and supervisors of the manual arts conduct such a survey of its field to discover what its real problems are, use some scientific method in the search for solutions, *and then act?*

—WILLIAM T. BAWDEN.

The Outlook In England

Each year in connection with the annual conference of the National Association of Manual Training Teachers of England a "souvenir handbook" is published which contains, in addition to the program of the conference and facts concerning the place of meeting, a number of "conference greetings" which are, in fact, letters written by some of the prominent schoolmen in England, who are in sympathy with the work of the Association. These "greetings" reflect, in some degree, the current thought, and help to mark the steps of progress. The conference, which is always at Easter was held this year in London, and the handbook is an especially large one, covering 138 pages. From this we give the following which seem to strike a most encouraging note:

From Dr. M. E. Sadler, Vice-Chancellor of the University of Leeds.

The place of handwork in education becomes more important year by year. Madame Montessori, developing the experience of Pestalozzi, Froebel and Seguin, has emphasized its value in the training of young children. The experience of the preparatory trade schools in London, Leeds and elsewhere shows how great a future lies before manual training in elementary and intermediate education, not to speak of the part which it has to play in all standards in elementary schools, both in town and country. In secondary schools, even in those where the linguistic tradition of the Renaissance is still dominant, handwork

seems likely to receive great attention as a factor in liberal education. In continuation schools, in technical classes and in the technological departments of universities and university colleges, handwork in its various forms is obviously a cardinal feature of educational training.

But this movement does not mean that education is becoming, in the bad sense of the word, more utilitarian. On the contrary, it is the physiological and cultural value of handwork which is strengthening its claim to ampler recognition in educational policy.

Behind all this, there is an even deeper social significance in the increasing importance of handwork in educational thought. It has been the fashion to disparage manual labor as compared with clerical. There is already a change in the current. This new regard for the dignity of craftsmanship is reflected in the change which is coming over our educational outlook.

From Sir Harry R. Reichel, Principal of University College of North Wales.

"I should be obliged if you would convey to the Easter Conference of the N. A. M. T. T. an expression of my cordial good wishes for the success of the meetings. There can be no doubt that we are on the eve of developments in our educational system which will invest the branch of training in which they and I are specially interested with a new importance by making manual training an essential element in a good general education."

From Professor W. Ripper of Sheffield University.

In the future there will be still greater developments of this important department of school work. There will, therefore, be an even greater demand in the future than in the past for wise guidance, sound judgment, and experience on the part of your leaders. I have no doubt they will be fully equal to the claims made upon them.

From P. B. Ballard, Inspector of Schools under the London County Council.

I wish to express my hearty good wishes for the success of the Easter Conference. During the last decade each succeeding Conference sees a marked advance in the manual training movement—an advance not to be measured by the mere increase of expenditure on handwork material; for it is largely of the nature of a spiritual conquest. The educational claims of handwork are being recognized in wider and wider circles. It forms an essential part of that so-called new educational system........and whatever system may in the future rise into popular favor one thing may safely be predicted of it: if it does not make provision for the training of the hand, it is doomed to failure.

Following the "greetings" are a dozen papers written by men in closer touch with the work. The first of these is an excellent paper

on "An Aid in the Cure of Truancy" by Dr. James P. Haney of New York City. All the others are by Englishmen. Of these the two that especially attracted our attention were those of Mr. Moss of London and Dr. Riley, secretary of the Hull Education Committee. Mr. Moss reviews the handwork of the London elementary schools, pointing out some of the recent changes. He says,

Perhaps the most significant event which has occurred during recent years is the change of the control of handwork centres. During the years 1909-10 the Council decided to place the handwork centres under the control of the headmasters of the schools to which they were attached, and to put the handwork teacher on the staff of the school, thus recognizing the importance of combining for educational purposes what had formerly been two isolated units. This important change may prove far-reaching in its effects upon the educational activities and life of the school.

The headmaster who wishes to do so may now formulate a curriculum, the carrying out of which shall employ and coordinate the varied elements of the teaching power at his disposal. Under no other conditions would it have been possible to realize that change in school method which the results of modern research have proved to be so desirable and necessary.

"Definite attempts are made to coordinate the work of the school and the centre in such subjects as arithmetic, drawing, composition, geography, object lessons, nature study, and practical science; suggestions are made as to the division and coordination of the work to be accomplished by the teachers in the classroom and the handwork centre respectively. It will be seen how far, educationally, the teaching of handicraft has travelled since the initial experiment in the year 1885.

During the last few years definite and persistent attempts have been made by educationists in London to extend handwork teaching to the "neglected middle" of the schools. The Conference appointed by the L. C. C. mentioned above had included in its reference "the necessity for a scheme (of handwork) linking up the kindergarten work with the existing handicraft schemes." The Conference began its sittings in March, 1909, and published its report in May, 1912. During the earlier deliberations of the Conference arrangements were made in about 90 schools to put into operation an experiment for introducing handwork in the junior classes. Before the Conference had concluded its sittings this number was increased to 200. The kind of work done in these experimental schools, falls, broadly, into three classes, according as the aim is:—

(1) To render more vivid and real the instruction in other subjects.

(2) To encourage domestic industries.

(3) To provide systematic and carefully graded instruction in paper, cardboard, clay, rafia, strip wood, etc.

An important feature is the provision of a practieal workroom in every new school. Not only has the Council decided upon this for new schools, but also to secure the same in existing schools where accommodation is available.

While it is early yet to speak of definite results accruing from this extension of handwork, it is granted, by those who are in a position to observe, that the results, educationally, amply repay the experiment.

Dr. Riley sounds a note of warning against extremes in correlation and the heuristic method of teaching handwork. We quote a few sentences:

It appears probable that manual instruction is not destined to escape from efforts to influence it by some of the prevailing infatuations of the day. Two features only will be referred to.

It is being suggested that manual instructors should not show a boy how to do anything; he should be shown the tools on the bench and the wood in the corner, and left to "express himself" without interference. The procees of education is presented as coming not from the outside, from the teacher, but entirely from inside the boy. The only thing the teacher has to do is to stand out of the light, and let the boy evolve himself.

"It is a mistake to believe that the function of the educator with regard to children's curiosity is to stimulate it. Education has to use that innate impulse, but in using it to prune and direct it."

"In all educational work the corrective element must come into play."

"The very purpose of education is to interfere with natural development, so as to secure a richer expression and a fuller exercise of the higher powers."

The second feature to which reference may be made is the infatuation for correlation. Of course, it must at once be granted that the various things which are done in a school course, and the way in which they are done should make all proper provision for such mutual help and advantage as may be derived from the influence of one study upon another.

In the re-action from the method of treating school subjects in watertight compartments, which is taking place, the usual characteristic extravagance is displayed, and "correlation," which is intrinsically good, may possibly meet with some discredit from the absurdities of some of its supporters.

Strong efforts are being made to correlate manual instruction with the other work of the school, and when this is done in a proper spirit the result must be profitable. Unfortunately, the enthusiastists are not satisfied with securing that where one subject has a definite influence on and relationship with another. They demand that every subject shall have an influence upon and relationship with every other subject in the school curriculum, and insist upon drawing up a scheme of correlation lesson by lesson.

Thus we have in one scheme the first lesson in the workshop correlated with an arithmetic lesson based on $2+2+2+2=8$, and this for boys twelve years old.

The difficulties encountered in these chessboard schemes have been treated with some ingenuity, but when one notes that the clay pipe and soap bubble of the modelling lesson are correlated with the South Sea Bubble of the history lesson, one is moved to unholy laughter.

Referring again to England, we wish to congratulate George F. Johnson of Liverpool, editor of *Educational Handwork* on the new

form of his valued magazine. With its new cover printed in red and brown on rough tan paper, its india-tint coated paper for the text, its ornamental initials and department headings, it seems like a new publication. In the contents, too, we realize that some new forces have been brought into line to build up this official organ of the Educational Handwork Association of England. Surely there is a great field for a magazine that will go forward consistently in the direction that *Educational Handwork* is now going.

—C. A. BENNETT.

ASSOCIATIONS

BOSTON MANUAL TRAINING CLUB.

At the meeting of March 8, the subject for discussion was "Manual Arts for Vocational Ends," and the Club was exceedingly fortunate in having with them as guests Charles A. Bennett, Editor of the MANUAL TRAINING MAGAZINE, and Henry Turner Bailey, Editor of the "School Arts Magazine," both of whom participated informally in the discussion. No stenographer being present, it is not possible to give a summary of their most excellent and inspiring talks. The discussion was led by Alexander Miller of Brookline, Harry L. Jones of Somerville, and Ludwig Frank of Boston, formerly of Fitchburg.

At the meeting of April 26, John C. Brodhead, Assistant Director of Manual Arts, Boston, presented a paper on "Manual Training," illustrated by stereoptican.

Synopses of the papers of Messrs. Miller, Jones, Frank, and Brodhead follow:

EDWARD C. EMERSON,
Secretary.

MANUAL TRAINING FOR VOCATIONAL ENDS.

Mr. Miller: I am not a believer in the old adage "off with the old, on with the new" as applied to manual training. I believe that manual training has done good work, that it has come to stay, that it has a bigger future than it has a past, and, while its methods may be different, still as time goes on it will not be superseded. Industrial and vocational work will have their place in the school curriculum as will manual training. Why should adverse criticism land so heavily on manual training courses?

What have the academic courses done for manual workers? Nothing very specific, and, while the manual department of a school is expected to supply many demands of a mechanical nature, but little or no return is made to further the interests and convenience of manual arts workers. The time is nearing us when all departments of school must work in harmony, each supplying what it can to every other. Watch the conductor of the orchestra; see how he feels the music; his whole soul seems to be wrappd up in it; he has forgotten himself; see how he calls out each variation; he seems almost to be playing the instruments himself, and the result of such concentration is an excellent harmony. Oh, for such a leader in manual arts, in industrial and vocational training; one who will unite all departments of languages, mathematics, science, physics, chemistry, art, and bring out to the fullest the possibility of a harmonious education for all pupils.

The call for industrial classes in our elementary and high schools is a normal demand and should be met by our teaching force with the heartiest response and highest effort. The demand is due to the lack of any apprenticeship system such as we had in former years. Are boys trained as thoroly today? No! We hire a boy, make a shop drudge of him, and let him steal his trade if he is smart enough. It is not long before he passes himself off as a full fledged workman, lies his way thru life, gets further knowledge in his trade at your expense

and mine, and proves himself by his poor workmanship to be a fair sample of our so-called industrial system.

As such are the prevailing conditions of producing workmen, is it any wonder that the public looks to its school system for something better? I believe that our schools should stand en masse for "Honor in Work"; to do an honorable and satisfactory piece of work should be the teacher's and pupil's chief desire and effort. Where is the lost joy of the worker, the love of the work for the work's sake, the doing of things "on honor"? Everything seems to be "hustle! hustle!" never mind doing a thing well, only get it done, and get the other fellow's money.

Right here I want to pay tribute of respect to the Sloyd Training School of Boston, under the leadership of Mr. Larsson and Mr. Sandberg, for I truly believe that few schools in this country have had greater influence in the direction of excellence in workmanship or whose product more truly illustrates the best and highest attainment of the worker!

Why are we doing so much with machinery when we have another great field in the building trades. Just consider what a field it is and how little it is cultivated in school work. Our teachers are just beginning to realize that much can be done in teaching boys, and girls too, the planning and construction of a dwelling. I believe that the study of architecture and building should be cultivated in our industrial classes, not to the exclusion of machine work, but in harmony with it, and in some cases in correlation with it. Such a study opens up the trades of the concrete workers, bricklayers, stone masons, carpenters, plumbers, and many more. Consider if you will what can be done with concrete! Here alone is a great field.

Let us approach this problem with dignity and with highest effort, and in so doing I feel sure that the schools of our country can do much to correct industrial evils and give to our children a point of view of the working world that is worth while.

DISCUSSION.

Mr. Jones: Each manual arts teacher and each school must work out their individual problems. The aim in the work should be the welfare of the state, and certain things should be standardized without affecting the individuality of the boy and girl, or weakening the interest in work.

The American public school system is maintained to prepare boys and girls for good and useful citizenship, and if manual training and drawing are to remain a part of our public school courses, their educative value, whether given from the point of view of general culture or for specific training for life's work, is dependent on the attitude which pupils are allowed to assume towards their work. Incorrect and slovenly habits of thinking and doing have no place in manual training. Organization of subject matter is as essential in the manual arts as in any other line of endeavor. We must consider the ninety or more per cent and provide for the masses and not some partieular class. Provision should be made for a system of universal education. If manual training is worth while, we should never give up the idea that it is for every boy, and that it is just as important in his plan of life as any other subject in the curriculum.

If the manual arts are to be considered a fad, let us drop them from the schools. If they are to educate for the industries, if they are to benefit the industries by training men of judgment and balance, if they are to emphasize skill, technique, and good workmanship, if they are to prepare young people for actual work of life while they are being given the refining and uplifting influence of the non-vocational studies, if they are to prepare for something definite at whatever time the boy might leave school, and not prepare him solely for some higher institution, let us keep the manual arts.

In the lower grades, keep in touch with vocational and industrial activities, giving the child an outlet for his physical energy, giving him means of occupation with familiar material, and enabling him to acquire a technique and a degree of skill in fundamental operations in vocational activities.

The manual arts will establish a standard of neatness, precision, judgment, and the cardinal principles which are necessary in all life's work.

In the upper grades and high school the manual arts should have a strong vocational bearing, differentiating the work in a marked degree in the VI grade and above. The work in the first two years in the high school should be both cultural and industrial in character, and taken by all the students. There should be specialization in the work for those who leave early, definite "unit" courses, and work specifically industrial in character, designed to serve definitely the needs of those who elect to enter vocational service. Manual arts in the last two years is not necessary for those planning to enter college.

Mr. Jones explained his work in Somerville. His aim in the manual arts is to impart a knowledge of the arts which will be of practical service to the pupils after they leave school, and at the same time assist them in the development of culture, refinement, and taste.

The grade work consists of drawing, constructive work, design, and color. The drawing is plain every-day drawing, with instruction similar to the instruction given in arithmetic, reading, and writing. Design and color are not taught as separate subjects, but correlated with everything possible.

Center work is emphasized in the first four grades. A piece of work, or some interesting topic is selected for the "center" and everything, for the time being, is grouped about that piece of work. School, home, and personal interests are most frequently selected. Mr. Jones showed the correlation of one center, "transportation," with history, geography, spelling, arithmetic, and language. There is correlation of drawing and manual training with all subjects in all the grades, also differentiating of drawing in the different high school courses, as commercial, preparatory, manual arts, general and fine arts.

Mr. Jones urged the manual training men of the state to make a firm stand in their work and continue to stand by its principles.

GOVERNING PRINCIPLES.

Mr. Frank: Many educators, departing from time worn school traditions and customs, now perceive in the grade schools real educational possibilities apart from fitting for the high school, and in the high school possibilities for all boys and girls of the community, not merely for those destined for college and the

professions, but for that larger body of pupils whose aptitudes, capabilities, and needs are not so much academic as practical. That the aim of the manual arts work of the elementary schools, or up to the pupil's fourteenth year, at least, should remain largely general or cultural seems definitely established. It is absolutely evident, however, that it is possible and desirable to adapt the work of the grades somewhat more closely to community needs and interests, and to bring it into closer harmony with domestic vocational interests. That pupils destined for the trades should have some more adequate preparation than is now generally provided, is coming more and more to be recognized.

I have noted here a few general principles which many manual arts teachers feel should govern to a greater or less degree the work in the grades or before distinctly industrial training is taken up. The work of the 7th and 8th grades and first year of the high school should be more thoroly correlated with other vitalized or industrialized school subjects. The successful accomplishment of this obviously demands more time than is now given. The work should meet a definite school, home, group, or individual need. Of these needs the largest social group should be met first.

Fine workmanship ought not to be expected nor insisted upon, but the article, when completed, should adequately meet the need in response to which it is made. It must "work". Projects should as a rule be selected from the world's work, from articles of common manufacture. The world's work includes the work of the school and of the home. While the work in general should be such that it can be performed wholly by the pupil, structure and design may in some cases be such that the children can perform only the simpler operations and process, e. g., assembling parts too difficult in structure, and beyond the ability of the pupil to plan and make; the planning and execution of the more difficult parts being done by advanced pupils, those of higher grades, or even by the instructor.

The pupils should be introduced to the world's work as it is actually done. As a rule, pupils should not be required to perform entirely by hand processes which are now always done mechanically or by machinery in actual practice. Insistence upon school methods regardless of shop practice can yield better industrial knowledge. So far as school work is concerned of course there are reasonable limits. Rightly handled, work including such operations would be found to yield sufficient manual training to be valuable and at the same time give the pupil a larger general knowledge of how things are done in practice and of the purpose of machinery and mechanical devices. Nothing should be done simply for the sake of keeping pupils busy. There is plenty of work that appeals to higher motives. While benchwork in wood undoubtedly has many advantages over other forms of benchwork for schools, we should not confine ourselves to it to the exclusion of work with other materials. It is not necessary that every finished product be a movable piece of furniture or apparatus. Many useful things may be done that will yield cultural value, useful knowledge, and skill, such as repairing furniture, caning chairs, framing and passepartouting pictures, cutting and setting glass, fitting keys, packing faucets, painting, soldering, etc.

That all pupils of the high school would be benefited by one or two years of freehand and mechanical drawing and manual training or household arts few can doubt. It is impossible to accomplish this however without lengthening the school day, and increasing the plant and teaching staff.

Perhaps the more pressing or immediate need, however, is that of modifying the present manual arts work with the view to adapting it to the needs of boys and girls who are to enter the trades and mechanical occupations. Such pupils should have the opportunity to benefit by some cooperative plan such as that outlined by Dr. Schneider of Cincinnati or to enter a special trade school at the end of the first or second high school year.

Actual experiments in the Cincinnati and Fitchburg high schools, in the Lewis Institute at Chicago, and other places have demonstrated that the cooperative scheme is profitable alike to the student and manufacturer, and continues the school life of many boys and girls who would otherwise enter the industrial field but illy prepared for advancement. The cooperative plan is based, as you know, upon an agreement between a group of manufacturers and a school system whereby the former agrees to institute and carry on a thoro and comprehensive apprentice course in their particular trades, and in which the school agrees to give both general and specialized instruction to the apprentices. The cooperative plan in Cincinnati is carried on in high schools in which all courses are offered. These courses are designed to discover aptitudes, and give general manual dexterity in the first two years. The students are then placed in commercial shops and continue their schooling either on the alternate week plan for the next two years, or one-half day a week if the necessity of the individual case requires it. In June of the second year, after their preference for a special trade has been discussed with their teacher, they are placed with employers who will start them on the wages of third year apprentices. If they do not make good by September, they may return to school and change their course. The schools are not trade schools, but they enable boys and girls to discover their aptitudes, and enter a trade intelligently at sixteen, which is the legal age in Ohio. The school then follows them for two years, and gives them the practical knowledge while the skill in the trades is given in the real shop.

The Fitchburg plan differs from that at Cincinnati in that boys only are taken, and that they enter the shops at the end of the first instead of the second year.

Altho it is difficult to predict just what form industrial education will take in the future, it seems that the cooperative plan has many advantages over the trade school, among which the following may be enumerated. The pupils work under commercial shop conditions, which would be difficult, if indeed possible, to parallel in the trade school. Little special school shop equipment is required after the first or second year. The pupils receive pay while learning, and are thus enabled to take the course and continue in school. The plan is not disapproved of by the trade unions.

MANUAL TRAINING.

Mr. Brodhead: Manual training is not training of the hand; it is more nearly training thru the hand. Manual training gives the individual more

complete command of himself and a keen sense of physical realities, more practical control of "things" and physical processes, a sense of the social significance of industries, more social intelligence and social enthusiasm, and the capacity to sense accurately, to think truly, and to judge logically.

Because manual training results in objects of interest, use, and beauty, the value of the work is frequently measured by such products whereas the real value of the work from the adult standpoint lies in the better habits, wider knowledge, and greater power which have resulted from the work. The pupil is interested in the visible tool processes and object, the teacher in the thinking, planning, and discriminating which has been going on.

In the first three grades, the work is largely with paper, cut, folded and pasted to form emblems, toys, weather signals, drinking cups, and cards suitable to special occasions, and to represent buildings and their furnishings, vehicles, etc. Occasionally twine, cloth, and paper fasteners are used and letter and crayon decoration added.

It is intended to take advantage of the dramatic and initiative instincts of little children to teach them to follow simple directions; to use the simple tools of every day life, pencil, rule, crayon, paste, and scissors; and to know the square, circle, rectangle, triangle, etc., and to broaden their ideas thru contact with these materials and tools.

In the fourth grade it is possible to read and make working drawings and to illustrate the work of the sheet metalworker, introducing the simplest tools of the draftsman. With cardboard of good colors are made geometric forms, trays, envelopes, and boxes, round and square, open and covered. The methods of folding and working out these patterns are similar to those used in sheet metalworking.

Building on the experience with cardboard, the fifth grade concerns itself with the problems of the bookbinder, using heavy pasteboard, paste, tape, linen thread, attractive cover and lining papers, and book cloth in harmonious colors. Individual planning and sketching are required, and memorandum pads, needle cases, calendar stands, post card holders, portfolios, and even sewed books, all in durable materials, result. Many of these articles, such as notebooks for class use, portfolios for principals or teachers, stiff covers for "Courses of Study" or other pamphlets, boxes for lower grade materials, and cases for drawings, become of immediate use in the schools. Here the power to adjust oneself to conditions is emphasized, and another world craft is interpreted.

The big boys' schools in the city are situated where artistic temperaments may be hoped for, and there modeling has been introduced in the middle grades with much success. Pupils represent in bas-relief, or the round, street scenes, games, signs, animals, flowers, etc., and design tiles, tablets, moldings, and pottery, working from the same sort of patterns, drawings, or blueprints (made by the pupils) as are used in commercial shops.

During the three upper grades, benchwork with special equipment and instructor brings more closely to the boys a knowledge of the processes involved in construction from a variety of materials, and gives them the ability to plan simple articles and to select the right tools in making them. In each grade at

least one problem in design is worked out, thereby promoting an appreciation of what is fine in construction.

In making things in quantities, there is a chance to illustrate shop methods, team work, and the division of labor, and to give an intelligent understanding of the fundamental and modern crafts, and a sympathy for the workers therein. Based on such shopwork, other manual training, and drawing, the boy's inclination for a future industrial career can frequently be discovered. The first year introduces the tools and simpler processes of woodworking. While the instructor knows that it is the "boys" and not "problems" that he is after, the demand is insistent for as good work as possible.

The second year produces some skill and accuracy and introduces more advanced processes. As nearly as is found possible and advisable, the processes practised by the best cabinet-makers are used.

During the third year, a boy is expected to apply his knowledge and skill in the solution of special and personal problems, even if they involve other materials than wood.

For the thoro training of beginners, and in order that all the tools and processes shall be known, the flexible course above hinted at is laid out for the first two and one-half years. But this is freely interrupted when pupils have practical ideas to carry out or when work for the schools presents an opportunity for thoughtful, useful work.

The last half-year of the eighth grade is devoted to problems suggested, executed, and sometimes designed by the pupils. It would be difficult to give any idea of the wide range and the total number, the excellence, and the money value of the objects made by the boys, aside from any course, in the sixty-five manual training rooms in the elementary schools. Reports from forty-six instructors, covering a period of one year, show as high as seventy-five pieces per room in some cases. The problems vary from drawing-boards and T-squares, frames, sail boats, wastebaskets, photographic apparatus, game boards, candle sticks, necktie and plate racks, cutting and ironing boards, footstools, toys, skees, monoplanes, bats, and bird houses, to chestnut and oak furniture such as book and magazines cases with glass doors, music and medicine cabinets, piano benches, tables, desks, chairs, (straight arm, rocking and Morris) taborets, ottomans, settles, costumers, gas lamps, screens, umbrella stands, clock cases, sideboards, window seats, sewing and shoe polishing stands, ladders, carts, hammocks, and sleds. The making of the above has involved working with leather, brass, copper, glass, cloth, reed, stains, varnishes, fillers, paints, cord, gas pipe, and wire, as well as wood and together with the sharpening of skates, repairing of wheelbarrows, boxes, sleds, etc., has given the pupils valuable and vivid experiences.

Boys now devote about ten per cent of their time to work for the schools. This promotes unselfishness, and furnishes to the work the stimulus of real needs. It would be easier almost to name the kinds of work not undertaken by these willing boys and teachers. They have made drawing stands, easels, tables, taborets, footstools, leg rests for cripples, batons, pedestals for statues, bulletin boards, book racks, modeling boards, basket bottoms, looms and loom appliances, filing-stamp, savings and other boxes, ventilators, cages, door stops, bench stops, vise handles, towel and tool racks, yard sticks, screens, loose-leaf covers,

bookbinders' gages, and athletic and physical apparatus. They have planed doors and drawers, repaired stools, desks, frames, maps, and flag standards. They have extended platforms in halls, made and put up shelves, bound books, uncrated and set up benches, and set glass.

It cannot be disputed that all this work has a decided and substantial money value. It would lose its educational usefulness if it did not come up to commercial standards. The year's work of one school in fitting up a domestic science center in 1910-11 was valued by a prominent furniture dealer at $200, for furniture alone. On the other hand, this work has not decreased the activities of the local dealers and craftsmen. The schools do not yet receive the financial support that they need and deserve, and the economies effected in the lines described above have simply enabled the schools to spend more elsewhere or to have needs supplied which could not otherwise have been satisfied.

NATIONAL EDUCATION ASSOCIATION.

It has always been found necessary for the Secretary's office to circularize the members of the Association at least three times each year. In view of the fact that the postal laws admit publications issued quarterly at second-class rates, the Secretary presented to the joint meeting of the Board of Trustees and Executive Committee, held at Philadelphia, February 26, a proposition to establish the N. E. A. Bulletin, publish it at least quarterly, and enter it as second-class matter. After a full discussion, a resolution was passed instructing him to carry out the plan suggested.

The September number will contain information for the benefit of those members who were not present at the summer meeting—such as the list of officers elected, the resolutions adopted, and a short summary of the proceedings of the meeting. The December number will contain the program and announcements for the meeting of the Department of Superintendence. The March number will contain a summary of the business transacted at the superintendents' meeting, and a general outline of the plans for the summer meeting. The June number will contain the program and detailed arrangements for the summer meeting.

FIFTY-FIRST ANNUAL CONVENTION.

Acting upon the authority conferred by the Board of Directors, the Executive Committee announces that the fifty-first Annual Convention of the National Education Association will be held in Salt Lake City, Utah, July 5-11, 1913.

Meetings of the National Council will be held on Saturday, July 5; Educational Sunday will be observed on July 6; and the general sessions will open on July 7.

Copies of the Bulletin containing full information with respect to railroad and hotel rates, program, etc., may be obtained upon request, from the Secretary, D. W. Springer, Ann Arbor, Mich.

IOWA MANUAL ARTS ROUND TABLE.

The manual training round table of the South-Eastern Iowa Teachers' Association held at Fairfield, April 3, 4, and 5 was well attended and an excellent

program, under the leadership of O. L. Chaney, Burlington, was presented. On the topic "How can manual training teachers make their work better," G. H. Nichols, Grinnell, gave the following four suggestions: 1. By visiting schools and keeping a record of the school and work done. 2. By visiting factories and noting their methods. 3. By reading books and magazines on this line of work, and also trade journals. 4. By doing summer work; that is, if the teacher has a theoretical education, get practical work; and if the teacher is a mechanic, attend summer school and get the theory.

A discussion of the subjects of the program resulted in a committee being appointed and the following resolutions were drafted: "Inasmuch as the time at present allotted for the teaching of manual training in the grades is insufficient, Be It Resolved: That we, the manual training teachers of south-eastern Iowa go on record as favoring no less than one-half day per week in the grades for this subject, and that they promote a continuous agitation until the time is allotted for the same. And Be It Further Resolved: That a copy of these resolutions be reported to the Iowa Manual Arts Association, and their hearty cooperation in this movement be urged; and that copies be sent to the MANUAL TRAINING MAGAZINE and other educational papers." Committee: F. E. Hiler, Fairfield; G. H. Nichols, Grinnell; H. D. Repass, Ft. Madison.

Excellent exhibits in both manual training and domestic science were displayed and much good was derived from the meeting.

H. D. REPASS, Secretary,
Fort Madison, Iowa.

MISSOURI ASSOCIATION OF APPLIED ARTS AND SCIENCE.

The Missouri Association of Applied Arts and Science met in conjunction with the Department of Manual Arts of the Missouri State Teachers Association, at Springfield, on November 14th. An excellent program was given, including the following topics and leaders of discussion: "Methods of Teaching Food Preparation," by Miss Louise Stanley, University of Missouri; "The Relation of Drawing to Other Subjects," by Miss Elizabeth Shannon, Warrensburg; "The Individual Project versus the Prescribed Model," by George H. Jensen, St. Louis.

It was decided to place all the departmental meetings of the manual arts section of the State Teachers Association, in future, under the control of the Missouri Association of Applied Arts and Science. A district organization was affected whereby the State will de divided into smaller districts for more effective work among the teachers of the manual arts in the smaller cities and towns.

The next meeting of the Association will be held in connection with the State Teachers' Association at St. Louis, in November, 1913. The officers elected for the ensuing year are: President, E. O. Slater, Springfield, Mo.; Secretary-Treasurer, F. A. Aurand, Springfield, Mo.

WISCONSIN SCHOOL ARTS AND HOME ECONOMICS ASSOCIATION.

The committee appointed one year ago at Eau Claire to investigate and report upon the activities and tendencies in drawing, shopwork, and home

economics during the current year and make recommendations for topics for discussion at the next meeting of the Association has prepared the following summary report:

The committee divided up its work under the three heads suggested in the above paragraph. Each member assigned to a particular subject secured information either by visitation or correspondence or both, from a large number of public schools, normal schools, and universities in Wisconsin and surrounding states, and from typical schools of all grades in other sections of the country. The detailed report on the entire investigation is in the hands of the secretary of the Association. The following is a brief summary of the principal findings:

DRAWING.

MRS. ADDIE C. POND.

1. The principal line of work in the lower grades is *memory* sketching. Quick imaginative drawings are made of objects and scenes which are first studied direct and worked out in detail.

2. A much closer correlation between drawing and shopwork in the upper grades and between drawing and all lines of handwork in the lower grades of school and drawing and the activities in the home exists than was apparent a very few years ago.

3. Drawing is rapidly becoming a copartner with vocational subjects as a means of natural community interest and expression. It is being adjusted to vocational lines of work especially in the upper grammar grades and high school. In some cities a regular course in handwork, making use of community materials largely, has been introduced as low as the first grade and extended thru to the fifth or sixth grade. This course is closely correlated with the courses in art and domestic science and is often under the supervision of the director of drawing as in St. Louis, Mo.

4. A semi-industrial type of drawing is the latest effort on the part of drawing teachers and supervisors. This is manifested particularly by a predominence of design in all grades, but especially in the upper grammar grades following the composition and pose study of the lower grades.

5. There is a strong tendency toward departmental teaching above the fourth grade, whereas, only a few years ago, this was true above the fifth or perhaps the sixth grade only. The *special* drawing teacher is therefore finding a larger place in the public school grades below the high school.

HOME ECONOMICS.

MRS. FLORA PATTERSON.

1. A close correlation with home work especially in rural districts. In an increasing number of places school credit is given for an approved form of home sewing, cooking and several lines of home making.

2. More scientific work is being done than formerly in the upper grades, high schools, and colleges. Courses of study are being developed with greater care for continuity in subject matter and method of presentation.

3. A tendency is apparent toward a greater utilization of the inexpensive but artistic and serviceable fabrics and the cheaper and more nutritious foods.

The "make-over" both in clothing and foods is being emphasized more than formerly. This perhaps is due to the influence of the vocational education movement.

It is quite possible that the national movement for Federation of Housewives, which is "To uphold the enforcement of laws which affect food supplies, the family health, the cost of living, and to secure further legislation when necessary toward that end" has an influence upon the organization of material for the public school domestic science work. The Parcel Post also has had some influence in this direction.

4. An increase in the number of institutional lunch rooms in the larger school systems and institutions. The home economics departments are, in increasing numbers, serving lunches and preparing food for school consumption. More and more the classes in sewing above the elementary grades are finding it possible to do some work for the community thus increasing the social responsibility of the school.

5. Both sewing and cooking are being pushed farther down in the grades. In many special schools and in several of the larger school systems cooking as well as a simple form of sewing is begun in the first grade.

SHOPWORK-MECHANICAL DRAWING.

F. D. CRAWSAW.

1. The lower grade work remains much the same as it has in the past, but with a tendency toward change in two directions:

a. The project is considered not so much as formerly for its own sake. It is selected because it fits into a general scheme of correlation but represents also a good problem in construction in which the standard of technique is regarded as important.

b. Better materials are being used and more regard is given to good color. A closer correlation is being secured between drawing, both freehand and mechanical, and the construction work. This is especially true in the grammar grades.

2. A greater variety of materials are being used in the grammar grades. With rare exceptions woodwork, with a very little freehand working sketching, was the one subject from the beginning of the sixth grade to the end of the eighth up to two years ago. Now in the central west, and to some extent in the east, thin metal, larger woodwork, some concrete, and occasionally forging are introduced in the seventh and eighth grades. This means a *prevocational* opportunity and a *breaking away* from the formal course of projects in woodworking only.

3. As there is a tendency toward differentiation in the grammar grades, so there is even a stronger tendency in this direction in the high school and a strong leaning toward early as well as late high school specialization.

a. Mechanical drawing is tending toward a course in working drawings without the usual number of instrumental and geometrical sheets.

b. Woodworking is becoming very practical. Fewer abstract exercises, such as joints are being used. When they are introduced it is principally for the purpose of giving definite practice in construction details just before they are used in some project of social and utilitarian value.

c. Framing is taking a place with advanced furniture and cabinet making in the sophomore high school year and with it architectural drawing is being introduced.

4. In the normal schools more time is being given the manual arts. There is a tendency toward *special* rather than *general* preparation for teaching. There is also a tendency toward specialized normal schools—some one in each state becoming special in manual arts.

5. The universities are introducing manual arts work for prospective teachers. Sometimes this is done in the department of education. In other cases the work is given a "departmental" or "course" basis. There is a tendency toward the production side of shopwork, making use of the greatest possible number and best commercial shop methods. This is particularly true in the engineering colleges.

CONCLUSION.

In general your committee finds:

1. A great increase in the number of public schools offering work in drawing, sewing, cooking, and shopwork.

2. A strong tendency toward *real* correlation and cooperation.

3. An industrialization of all forms of handwork to make them meet the real needs of the people.

4. Specialization both in the organization of subject matter and in the teaching done.

5. More practical and scientific courses.

It is along these five lines of development that your committee would recommend special papers and round table discussions for the next meeting of the Association.

Respectively submitted,
FLORA S. PATTERSON
ADDIE C. POND
F. D. CRAWSHAW

EASTERN ART AND MANUAL TRAINING TEACHERS' ASSOCIATION.

The annual gathering of art and manual training teachers at the Ethical Culture Schools, New York, March 20-22, was as interesting as the teachers were interested.

The question might justly be raised whether the meeting and renewal of old acquaintances, the forming of new friendships and the consequent exchange and interchange of ideas and experiences, at the meeting, and later on, was not intrinsically more valuable to the teachers, more fruitful in promoting progress, more refreshing to mind and body, than the more formal presentation of papers and their subsequent discussion.

The reason for this greater benefit accruing to the attending members from the more informal part of this and similar meetings, from this personal and confidential exchange and interchange of ideas and experiences, may be found in the fact that these incidental talks touch upon and include the social and economic side of the teacher's daily activity as well as the pedagogic side.

TURNED MAHOGANY TABLE, TEACHERS COLLEGE EXHIBIT, EASTERN ART AND MANUAL TRAINING TEACHERS' ASSOCIATION.

As a matter of fact the social, the economic, the ethical, and pedagogic problems of our industrial life are so closely related, so intimately interwoven and inter-changing in their various aspects, that a more liberal recognition in formulating the program of these annual meetings of these problems in their different relations might be considered a gain in helpfulness to the members. The economic side of manual training and vocational education might be discussed by the members sending in statements of cost of their respective schools, these statements then to be made the subject for a discussion upon maximum effectiveness for the good of the community at a minimum cost per pupil, and then going before the people as a compact body to tell them of what the people need and what it can be furnished for.

This would impress the people with the business acumen of the teachers, create confidence, bring the teachers closer together, giving them self-reliance as a body, enabling them to stand before the people and their respective school boards more in the position of leaders, collectively and individually, in this branch of education.

Upon the social and ethical side of the vocational education problem there is a wide field for discussion in trying to answer the question how the assumption by many school people, that vocational education has little or no cultural value, can be refuted and how, in its particular sphere of usefulness, manual training and vocational education can be made, and ought to be made, just as culturally effective as professional education. That other social problem, whether and how manual training and vocational education can be made useful in counteracting the atrophying influence of modern factory work, might also furnish many points for discussion, thus again making the intelligence and experiences and observations of the art and manual training teachers serviceable to the community, and incidentally, raising their own standing and self-reliance in the bargain.

The foregoing reflections bring us to a consideration of the more formal program of the meeting. The value of a program lies in its latent possibilities to serve as a sort of clearing house for the multiplicity of ideas brought together in a convention of teachers and offering an opportunity for a crystalizing out, as it were, of the best there is contained in that multiplicity of ideas, to serve the teachers as a guide in their search for progress and improvement. This would require topics and speakers representative of those social and economic interests, aside from the teachers, of course, which are to be benefited by their work.

As to the topics the selection of subject matter was highly commendable but there were too many. There were 27 topics spread over 9 meetings, leaving out the banquet. The meetings lasted an average of three hours each. Allowing 30 minutes for lost motion at each meeting, there remained a total of available time, for presentation and discussion of each topic, of 51 minutes. The main speaker was accorded 30 minutes, and discussion 10 minutes if there was one, and 50 minutes if there were two speakers. In this case, or when the speakers overran their time and were not checked, as was frequently the case, there was no opportunity for discussion from the floor which is often more valuable than the paper itself. Hence, one or at most two topics per session might be found

more valuable, and the meetings as a clearing house for ideas would come nearer the realization of their purpose.

Concerning the representation of related interests this meeting, and all teachers' meetings for that matter, show a touch of the aristocratic tendencies of our American educational system. Of consumers of the teacher's product there seemed to be only two upon the program, and only one consumer had interest enough to remain thru all the sessions of the meeting. This is a subject deserving of the attention of the association.

Coming down more specifically to the merits of the things said, where there was so much said that was good, it would be impossible to do justice to every topic. Hence, only a few points are picked out at random. The perennial discussion about nomenclature seems to be a waste of time in as much as there is liability to lose sight of the fact that it is not the name of the school which determines the nature of its work, but the nature of the work of the school is determined by the industrial necessities outside of the schoolroom. That is to say, as long as our training for vocations remains general in its scope the principal part of this training consists in manual work, that is in learning the manipulation of tools. But as our industries developed, additions and varieties in this training of the use of tools were required and as time goes on there will be other requirements and there will be no end of changing the nomenclature if it is thought necessary to give a new name to every new requirement by our industries.

When, in 1874, at Erie, Pa., the writer established the first school of this sort in Pennsylvania, he called it industrial school, because it served the needs of the industries and while the requirements for this kind of education have greatly changed since, it still serves the industries and is therefore in its basic application, still industrial, or vocational, training, whether it is offered in the sixth grade or in the high school. Similarly, training in the use of tools is manual training in the sixth grade as well as in the high school; hence, the one or other name applied thruout would serve the purpose, as expressive of the basic principle, irrespective of changes in form of requirements by the industries.

To us industrial outsiders it appeared as if the point of training for competition should have received more emphasis and recognition, especially by the eastern teachers. Owing to the west straining every nerve to develop its own industries as its population increases, in order to become independent of the eastern industries, and the south likewise waking up, competition will become keener, demanding a more intensive cultivation of our mental resources in the east. Moreover, European industrial countries are likewise straining every nerve to head us off in the markets of the world and they all spend a great deal more money, time, and energy for the education of their industrial workers than we do. Hence the necessity for the manual training teacher to study the situation in order to shape his work accordingly and to do justice to himself and to his pupils. It will not be many years before the activities of our eastern steel works will be confined to a territory east of the Mississippi.

One point brought out deserves particular consideration. In speaking of the efficiency of teachers it was rightly said to be unjust to expect $2,000 worth of work for $900. It was also rightly said that the public must be educated

up to a realization of the value of the work done by the manual training teachers. As usual, however, there the matter stopped, instead of appointing a committee to propose ways and means how to educate the public and then doing it. Not much, tho, will be accomplished along those lines unless our schools and teachers become more democratic and thus get nearer to the people. Our great body of teachers stand isolated and are not understood by the people, hence their value to the community is underestimated. Neither collectively nor individually do our teachers make efforts to impress their intelligence, their worth, their valuable psychological experiences upon their environment. They do not study the situation, they stand aloof amidst the surging sea of social and economic problems which keep the outside world in a ferment. The teachers do not seem to have sufficient confidence in themselves to assert themselves, hence they are not appreciated by the people. Especially the women teachers should study the situation with increase of their influence. Our body of teachers has the strength of a lion if they will only exercise it; but they act like a lamb.

CANDLE-STICK IN BLACK WALNUT AND COPPER, TEACHERS COLLEGE EXHIBIT, EASTERN ASSOCIATION MEETING.

How extraneous social and economic conditions force attention from our schools and shape their character was signally illustrated by the remarks of F. G. Bonser and W. T. Bawden in discussing the topic: "What Constitutes Manual Training." It is a distinct advance in the conception of the function of manual training, and a credit to the manual training teachers, to have such a broad view taken and to grasp and to expound the idea that manual training, or industrial education, or whatever else it may be called, is after all a social-economic question with ethical requirements of a high order, more even than it is a pedagogic question.

Whenever our manual training teachers, male and female, fully grasp the significance of the fact that their work, in its various forms of application from the highest degree of industrial art to the teaching of plain industrial arithmetic in the eighth grade, will result in the shaping of millions of our population for a new social-economic status such as we have not had thus far in this country, then the value of this work will be greatly increased. Hence the necessity not to neglect in our scheme of broader art and manual training the civic and ethical elements. Any purely mechanical dexterity training which appeals only to the selfishness of the industrial worker, creating no other desire but to get all out of the social soil without feeling any obligations to put something back into it in the shape of social service, will sooner or later react injuriously upon society.

Altogether the meeting was of a progressive nature, inspiring, animated, and enjoyable in every way. It now remains with the newly created board of directors to advance the interests and the scope and usefulness of the Association.

PAUL KREUZPOINTNER,
Altoona, Pennsylvania.

TWENTY-FIFTH EDUCATIONAL CONFERENCE OF THE ACADEMIES AND HIGH SCHOOLS IN RELATIONS WITH THE UNIVERSITY OF CHICAGO.

The topic discussed in the Manual Arts Section of the Conference was the articulation of high school manual arts courses with general college work.

In all of the papers, and in the ensuing discussion it was noted that such courses undoubtedly contribute greatly to the success of the rest of the high school work and to the subsequent life of a large number of pupils whether they attend college or not. It was maintained that these more general values outweigh the specific value of the manual arts as college preparatory subjects and amply justify the high school in administering manual training courses in any event.

In the discussion of the narrower question, the value of manual training as a college preparatory subject, the well known objections of the technical universities to giving credit for high school manual training and drawing were taken up in considerable detail and the position of such objectors shown to be untenable, and it was made evident that the attitude of several technical colleges is distinctly less liberal than many general and classical colleges.

The following quotation from one of the papers well expresses the evident opinion of those present regarding this matter of articulation: "If in order to rightly connect with college, it is necessary that there be continuity of work, the same courses of instruction carried on in unbroken line, then there is no hope at present for pupils of manual arts courses except in a very few strictly technical colleges. Two roads may join, however, without going in the same direction. All that is necessary is that a traveler may pass from one to the other without inconvenience. We maintain that if a pupil on leaving a manual arts course is prepared to carry successfully the work of a given college, he is ready for that college. We hold that if a pupil, who has finished a four years' high school course, has the ability to do freshman work in college, he ought to be given credit for all of that high school course whether classical or manual arts."

This whole discussion emphasized the desirability of authentic information regarding the degree of success attained in junior college work by students entering the university with liberal entrance credit for manual training and drawing.

Perhaps the most significant point made, so far as the University of Chicago is concerned, was that relating to the preparation of teachers of manual and industrial training. It was shown that one reason why manual training does not articulate better with college work is because of the difficulty of securing manual training teachers who have any acquaintance with the higher institutions. It was shown that, in the nature of the case and in light of the great demand

for such teachers, it is practically impossible to find any considerable number of men who will give four years to college preparation, unless in these four years they can secure a liberal amount of necessary technique; that is to say, an amount enabling them to teach successfuly in high schools.

Another quotation from one of the papers is as follows: "Now if colleges and universities are really interested in helping solve high school difficulties, here is one to try their mettle. There is a most urgent demand all over our country for trained vocational teachers. I know of no profession in which the demand so far exceeds the supply. Let the colleges and universities establish courses for teachers, to which actual tradesmen may be admitted. In Indiana our recent law provides that up to 1915 schools may employ as teachers, without examination, skilled workmen regardless of scholastic attainments. We would really prefer that these men and women have training added, but where is the course for teachers to which the fact that they are skilled artisans admits them? These men and women direct from the trades have narrowly specialized training and they are called upon to teach more broadly than they have practiced. Such a teachers' course in a university as suggested would add the needed breadth. I understand the University of Wisconsin is beginning a work of this kind." Subsequently the plans of the University of Wisconsin for carrying on this work were discussed.

At the close of the meeting the following resolutions were adopted as covering the major considerations of the conference:

Whereas: The major purpose of instruction in the manual arts in the high school is to contribute directly to the vocational efficiency of the pupils, and

Whereas: It is still a debatable question whether manual training in the high school will contribute materially to the subsequent success of an individual, *as a student* in the universities other than technical, and

Whereas: No one seems to doubt the value of such training for *success in life*, after, or without, college training and experience, and

Whereas: The University of Chicago has already recognized this general value of manual training in the high school, and gives liberal entrance credit for such work, and the University, therefore, is in a peculiarly advantageous position to collect data on the above mentioned debatable question, therefore

Be it Resolved: That we earnestly request the University of Chicago to investigate the matter for the purpose of throwing such light on the question as a study of the records may reveal.

WILSON H. HENDERSON, Secretary,
Hammond, Indiana.

SHOP PROBLEMS

Geo. A. Seaton, Editor.

TROUSERS HANGER.

The problem of finding a project simple enough for those of limited woodworking experience, which will be sufficiently useful to make it something more than a mere exercise, is exceedingly hard to solve. We can then be duly grateful to D. K. Hiett of East Orange, New Jersey, for the drawings of the trousers hanger. The trousers hang over dowel rods which are easily removable from the frame when lowered into the position shown in the perspective sketch. To hang the trousers up they are first folded over the rod and the latter slipped into its place in the frame. The hanger may be made to accommodate any number of trousers, and when folded up against the closet door or wall and held in place by the hook, it occupies but little space.

CHILD'S CHAIR.

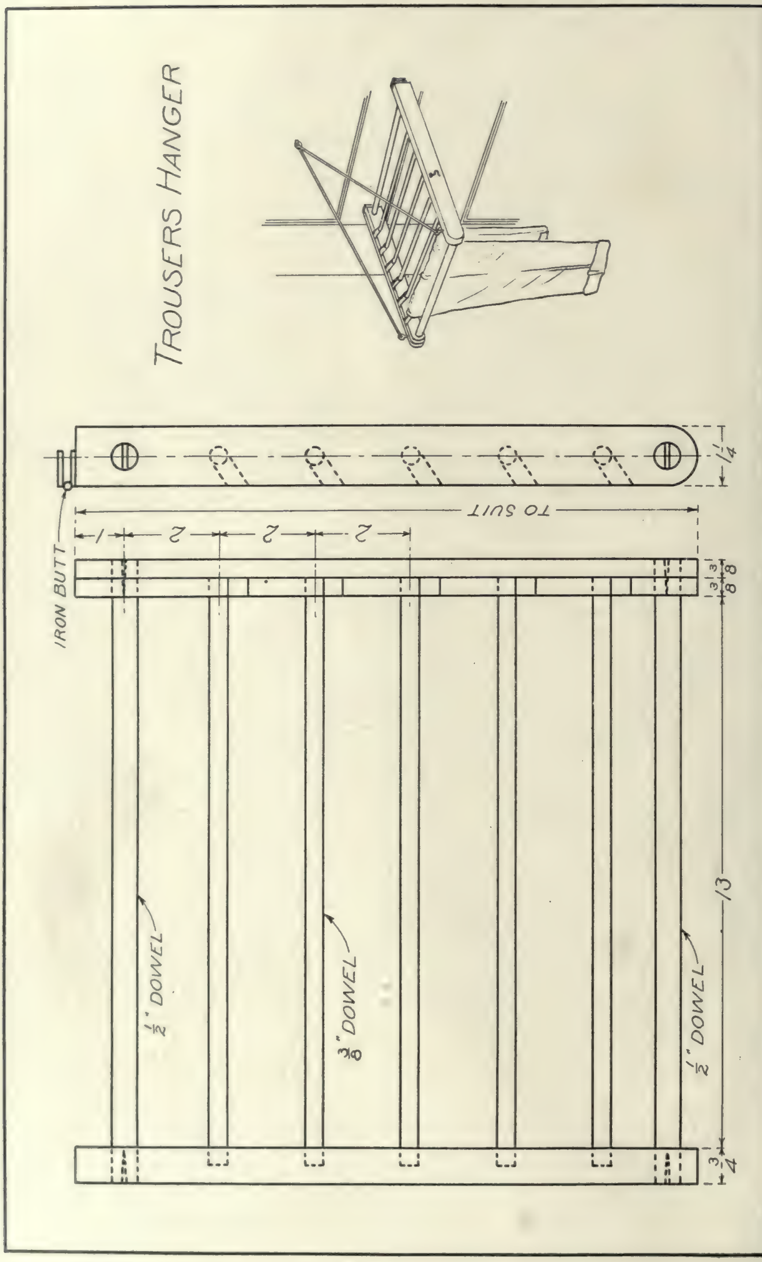
Under the direction of C. E. Paul of Faribault, Minnesota, the students in manual training have constructed forty chairs from the drawings given. These chairs were made for use in the primary rooms. In order that they might be light enough to be easily handled by the small children they were made from pine which was finished with red paint. The same lightness might be gained by using such a wood as chestnut, which can be stained for an effect quite different from the painted pine.

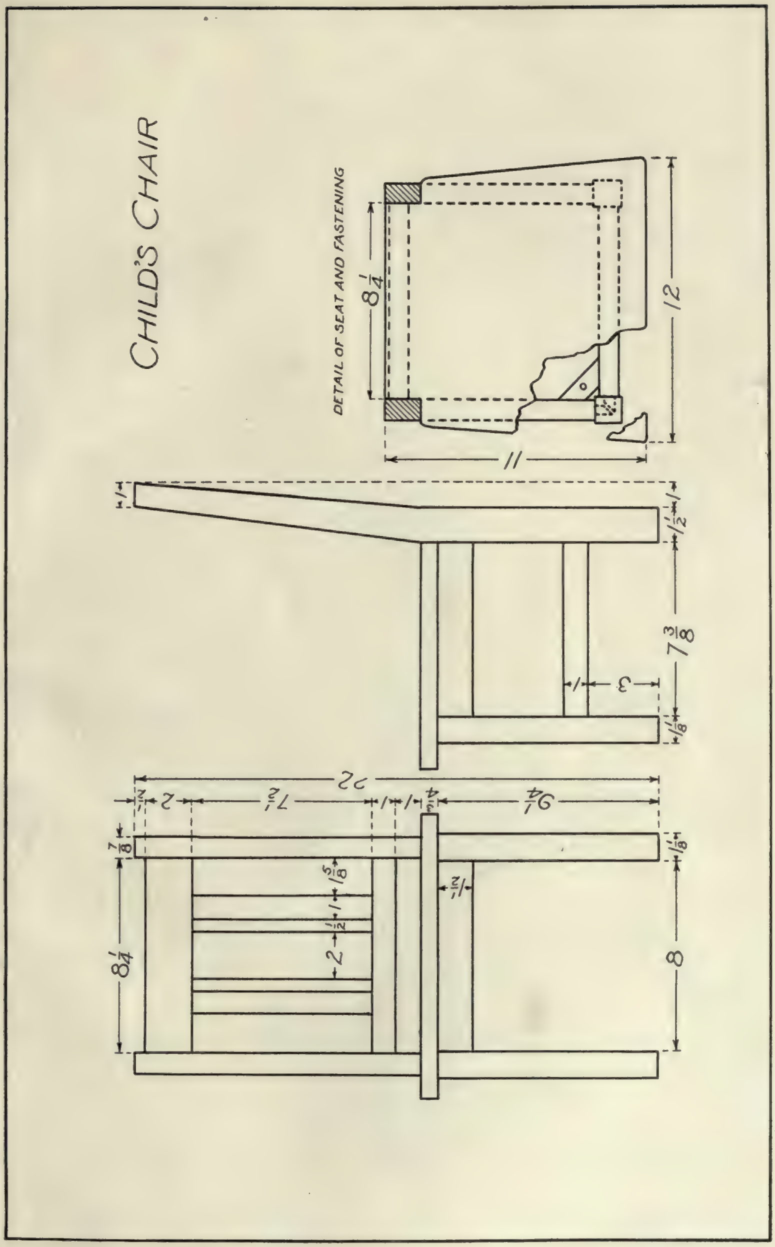
SLEIGH POLE.

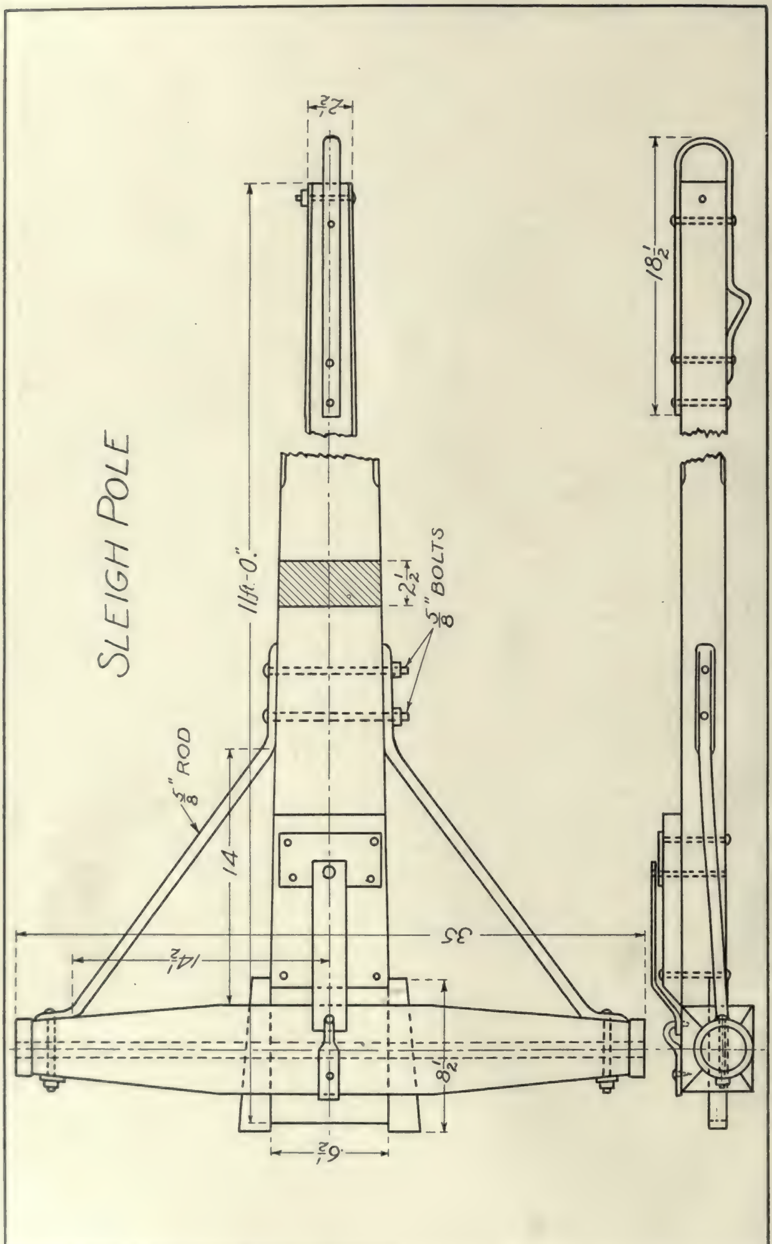
The students of Bemedji, Minnesota, have been turning out a number of unusual problems under the direction of A. D. Bailey. The work produced seems to be adapted very successfully to the needs of a rural school and may prove suggestive to others similarly located. The drawing presented in this issue is that of a sleigh pole.

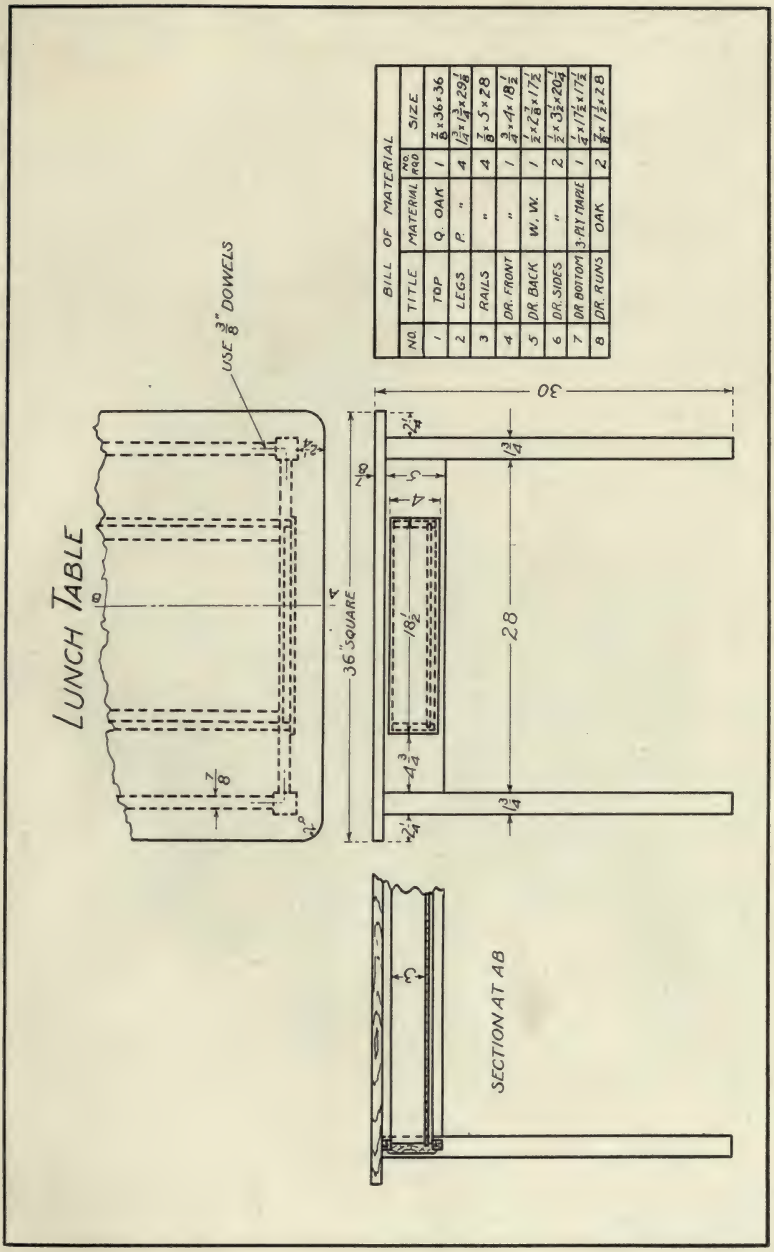
LUNCH TABLE.

The girls of Vocational School, No. 25, Albany, New York, operate a lunch room, which was furnished with 25 lunch tables made by the boys. The drawing of this table was sent in by Oakley Furney, director of vocational education in the public schools of Albany.


TROUSERS HANGER
IRON BUTT
TO SUIT
1
2
2
2
1/4
3/8
3/8
13
3/4
1/2" DOWEL
3/8" DOWEL
1/2" DOWEL


CHILD'S CHAIR
DETAIL OF SEAT AND FASTENING


SLEIGH POLE
11ft-0"
5/8" ROD
5/8" BOLTS
2½
14
35
14½
8½
6½
2½
18½



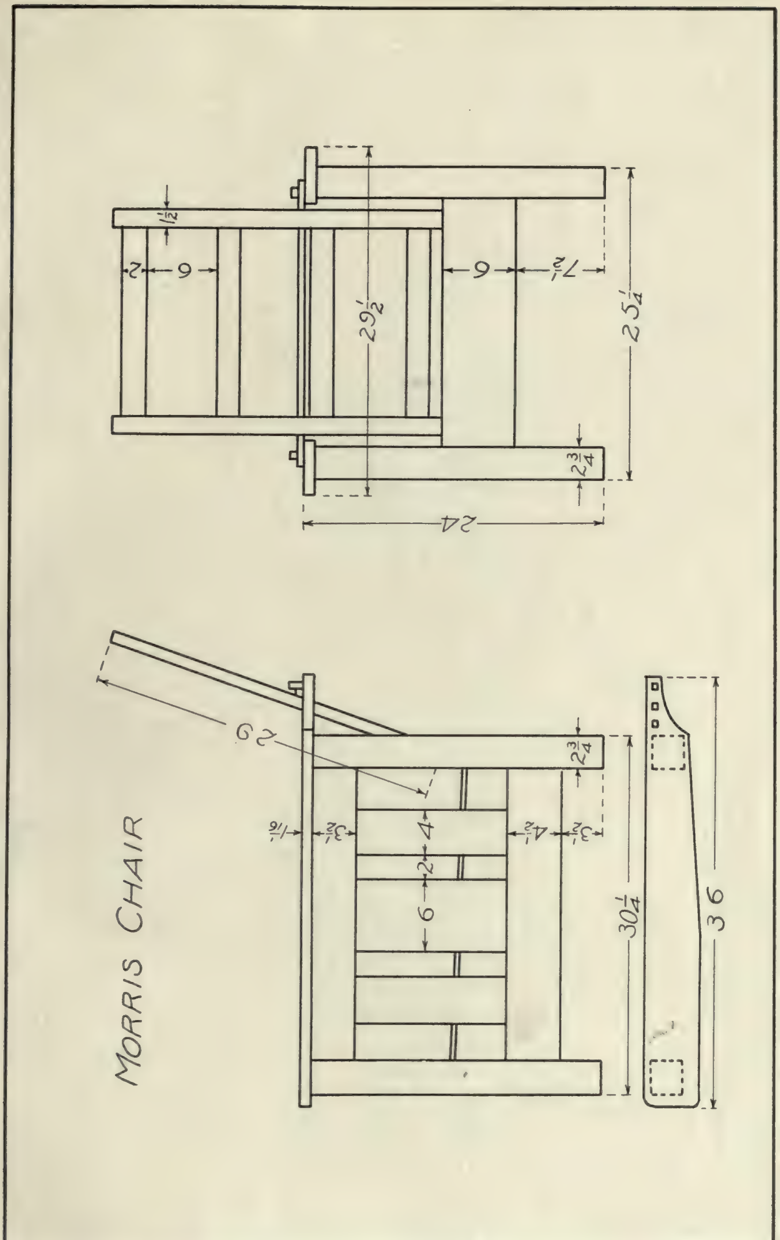
BILL OF MATERIAL				
NO.	TITLE	MATERIAL	NO. RQD	SIZE
1	TOP	Q. OAK	1	$\frac{7}{8} \times 36 \times 36$
2	LEGS	P. "	4	$1\frac{3}{4} \times 1\frac{3}{4} \times 29\frac{1}{8}$
3	RAILS	"	4	$\frac{7}{8} \times 5 \times 28$
4	DR. FRONT	"	1	$\frac{3}{4} \times 4 \times 18\frac{1}{2}$
5	DR. BACK	W. W.	1	$\frac{1}{2} \times 2\frac{7}{8} \times 17\frac{1}{2}$
6	DR. SIDES	"	2	$\frac{1}{2} \times 3\frac{1}{2} \times 20\frac{1}{4}$
7	DR BOTTOM	3-PLY MAPLE	1	$\frac{1}{4} \times 17\frac{1}{2} \times 17\frac{1}{2}$
8	DR. RUNS	OAK	2	$\frac{7}{8} \times 1\frac{1}{2} \times 28$

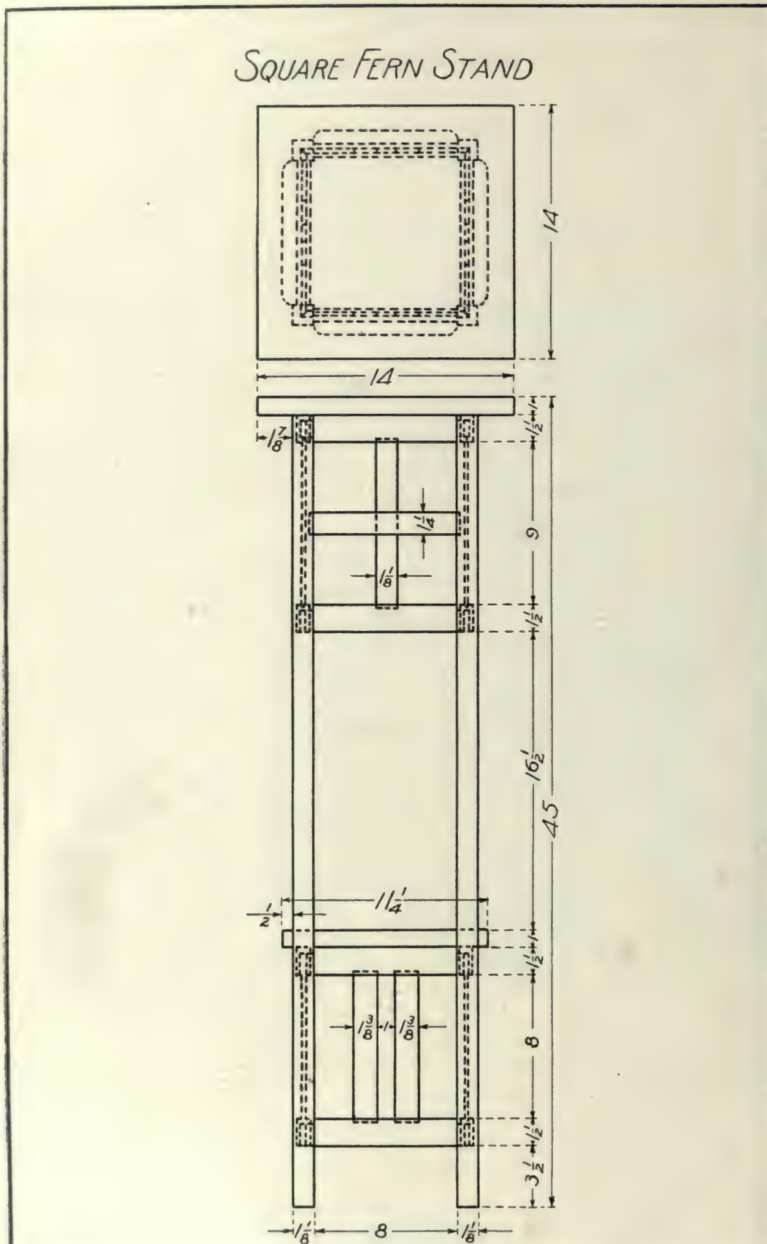
MORRIS CHAIR.

The excellent photograph shows a Morris chair made in the Boys' High School of Reading, Pennsylvania, under the direction of W. E. Hackett. The

MORRIS CHAIR.

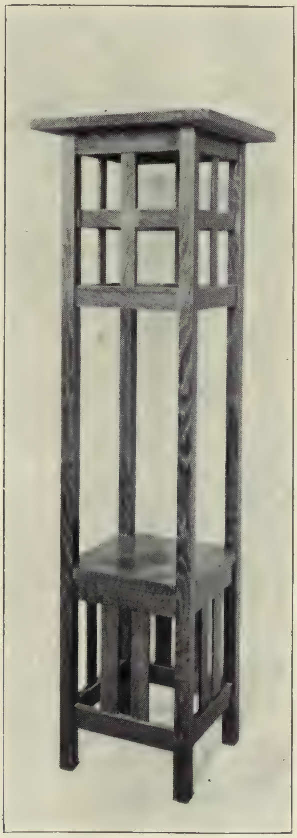
proportions are pleasing and the construction varies but little from the standard, except in the method of the adjustable stop for the back. This can be seen both in the photograph and in the working drawing.


MORRIS CHAIR


SQUARE FERN STAND
14
14
$1\frac{7}{8}$
$1\frac{1}{2}$
1
$1\frac{1}{4}$
9
$1\frac{1}{8}$
$1\frac{1}{2}$
$16\frac{1}{2}$
45
$11\frac{1}{4}$
$\frac{1}{2}$
1
$1\frac{1}{2}$
$1\frac{3}{8}$
1
$1\frac{3}{8}$
8
$1\frac{1}{2}$
$3\frac{1}{2}$
$1\frac{1}{8}$
8
$1\frac{1}{8}$

SQUARE FERN STAND.

The photograph and drawing of the square fern stand furnish an interesting example of some of the work being produced under the direction of E. F. Kranquist at the Northeastern State Normal School, Talequah, Oklahoma. This is a Cherokee Indian School. The fern stand is out of the ordinary but very pleasing in its proportions. The construction thruout is with the mortise-and-tenon joint.



FERN STAND.

CURRENT ITEMS

GOOD REASONS FOR TEACHING WOOD-TURNING IN THE HIGH SCHOOL.

The reasons for teaching wood-turning in the high school which are here listed were contributed by W. Melvin Fox of Hibbing, Minnesota. Mr. Fox says, in introduction, that the class of pupils, the selection of a course, and the question of finance should all be considered in discussing the advantages of a course in wood-turning. His list of advantages follows:

1. Wood-turning develops a splendid tool technique.

2. The necessary exactness of every movement and the science of every cut gives the pupil in time a marvelous accuracy.

3. Nowhere else in the field of manual labor will there be found such a close correlation of mental processes and motor activities.

4. The scientific side of the subject correlates it closely with physics and demonstrates forcibly the laws governing revolving bodies.

5. It is one good field for modeling and therefore opens a vast field for applied design.

6. It correlates with art and architecture.

7. It demonstrates the need of variety, precision, decision, and judgment.

8. It fills to some extent a home need both in the way of making new articles and of making repairs.

9. It fills a larger need in the commercial world, in an endless variety of turned furniture, furniture parts, house furnishings, tools, etc.

10. It has a value in familiarizing the pupil with the handling of machines.

11. It develops a feeling of importance and self respect, a confidence in one's own ability, as one sees his hands, directed by his judgment, shape into new and pleasing forms some object on the lathe.

12. It is a splendid preliminary training for pattern-making and the machine shop.

13. It is an excellent supplement to cabinet making.

14. It is the keynote of interest in the manual training world. It appeals to every typical American boy. To him it is the port of all real desires and the haven of many imaginary ones. The wood-turning shop is where he repairs his athletic and calisthenic paraphernalia, his trinkets and playthings.

15. It is the course that comes nearest to play and that is the course that means the most in the development of any boy, and in the hands of a skillful instructor has educational value without measure.

16. It can be used as an incentive to accomplish other work. Fine results are obtained by making the wood-turning class a privilege instead of a requirement.

17. In the shaping of bowls, trays, spindles, pedestals, and other forms, it has a strong tendency to develop the aesthetic, and in its advanced stages becomes

productive of positive works of art, creating a love of and a desire for the beautiful.

18. It will help greatly to awaken a genuine interest in work and a love of labor for labor's sake, and any course is justified which does that.

AN INTERESTING PLAN OF REORGANIZATION.

S. H. Holmes, superintendent of schools in New Britain, Connecticut, presented to his school board at a spring meeting a plan of school extension and reorganization which may prove suggestive in some features to the school authorities in other localities. New Britain now has a central grammar school which is overcrowded, necessitating additional housing room. The superintendent proposes as part of his plan a prevocational school, which will relieve the crowded grammar school, and which will be open to those who have completed the sixth grade and are thirteen years of age. The plan provides that from this school course, two years long, the pupil may go to a trade school with a three year course, thus bringing the pupil to eighteen years of age, the acceptable age in industry. Graduates of the prevocational school may also enter the regular high school.

In the prevocational school, which should have a six-hour day, half of the time would be devoted to academic lessons and half to handwork, including drawing. The lines of work suggested for the handwork are, for boys, elementary woodworking, metalworking, electric wiring, patternmaking, foundry practice, and electrical construction; and advanced metalworking, also bookkeeping, printing, typewriting and stenography. For girls are suggested cooking, laundering, dress and garment making, millinery, embroidery, homemaking, care of infants and invalids, bookbinding, typewriting, stenography, printing, and bookkeeping. Specialization in any one line for the entire two years would not be permitted, the aim being rather the gaining of such experience in several lines as will help the pupil to find himself.

Superintendent Holmes' plans include other features, such as a day continuation school, the trade school managed cooperatively by city and state, an improved high school curriculum, and changes in the first six years to provide a school for defectives, an ungraded school for foreigners in which the work will be cut down to the essentials of the three R's, a vacation school in which children may catch up if they have fallen behind their classes, an open air school for nervous and anaemic children, a course of study as at present maintained, and a course limited to essentials for retarded children.

This plan would appear to be truly democratic in that it would provide education for every type of child in the community. It will prove especially interesting to those who are studying the development of grammar grade manual training into work of a prevocational nature.

James A. Barr, of California, who was last year made manager of the Bureau of Conventions and Societies for the Panama-Pacific Exposition has again been honored by the management. In April he was appointed chief of the Department of Education for the Exposition. This appointment means much to

manual arts teachers, for Mr. Barr's interest in the newer forms of education is well known. He believes that one of the great features of the educational exhibits at the Exposition should show in a comprehensive way the relation that education bears to industry and to vocational work. Service, social, industrial, and educational, will be the keynote, sounded thru congresses, conferences, and exhibits, as Mr. Barr is planning them. Those who are acquainted with Mr. Barr will be confident that everything possible will be done by the chief of the Education Department to make the Exposition representative of the most progressive movements and of the highest ideals in the educational world today.

SCHEDULE OF STUDIES IN THE FITCHBURG COOPERATIVE COURSE.

The cooperative course in the high school at Fitchburg, Massachusetts, is now in its fifth year of existence. Apprenticeship is now offered in ten trades, with fourteen manufacturing establishments cooperating. The course at present has an enrolment of 125 students. Those who are studying this cooperative plan will be interested in the following schedule of studies in the Fitchburg cooperative course.

	Periods per week.
First Year (all work in school):	
English and current events	5
Arithmetic, tables and simple shop problems	5
Algebra	5
Freehand and mechanical drawing and bench work	8
Second Year (school and shop work alternately):	
English	5
Shop mathematics, algebra and geometry	5
Physics	4
Civics	2
Mechanism of machines	5
Freehand and mechanical drawing	6
Third Year (school and shop work alternately):	
English	5
Shop mathematics	5
Chemistry	4
Physics	4
Mechanism of machines	5
First aid to injured	1
Freehand and mechanical drawing	6
Fourth Year (school and shop work alternately):	
English	5
Commercial geography and business methods	2
Shop mathematics	4
Mechanism of machines	4
Physics, electricity and heat	4
Chemistry	6
Freehand and mechanical drawing	5

FURNITURE, CURTAINS, PILLOWS, AND ARRANGEMENT, THE WORK OF FIRST YEAR HIGH SCHOOL STUDENTS, ATLANTIC CITY, N. J.
THIS WORK WAS DONE UNDER THE DIRECTION OF THE LATE H. W. AVERY.

THE NEW TYPE OF RURAL SCHOOL.

The district school is in the process of evolution. Here is proof. Summit School No. 1, located in the lake district of Wisconsin near Oconomowoc, is a rural graded school, having an enrolment of sixty pupils and employing eight teachers. The work in the school does not extend beyond the eighth grade but there is an attempt to give to these pupils every advantage which a city school affords.

The school is housed in a well equipped modern building containing in addition to corridors, cloak rooms, closets, furnace room, and toilets, four school rooms, an office, and a manual training room. Two acres of ground give ample play space and well chosen apparatus helps the children to find exercise suited to their strength and liking.

The teachers are college and normal school graduates whom the school board has sought because of their ability and known efficiency as teachers. A well trained and resourceful young woman has charge of grades one and two, a teacher of experience and of a sympathetic attitude has grades three and four, two men and a woman each of whom has taught for years, is a college graduate, and has had special work along his respective line, have grades five, six, seven and eight in departmental work. In addition to these five who give all of their time to these pupils, there are three other teachers. An expert from Nashota Seminary comes twice a week to direct physical training, a talented and enthusiastic art teacher gives two days of each week to this school, and a German woman from Berlin who has taught in England and France has classes each day in French and German for pupils above the fourth grade who care to elect these subjects.

In industrial work, there is hand-loom weaving in the primary grades. Above those grades there is designing for the decoration of the home, the making of articles of wood which the pupils desire for themselves or which the school needs, the selection and gathering of seed corn, the testing of seeds, and visits to the near-by Pabst stock farm to compare the various types of cattle and horses and to fix an ideal for stock. In the spring there are the children's gardens and the planting of grasses of economic importance.

In other ways besides the teaching of the children this school tries to minister to the needs of the community. Two of the recitation rooms are so arranged that they can be thrown into one assembly room seated with opera chairs. Here many public entertainments are given, all of which are free. A singer and a pianist have given a program especially adapted to children; the patrons of the school have listened to a lecture on the subject, "Reaching All Children," and have heard illustrated lectures on, "Rural Life in Scotland," "The Dairy Cow," and "Live Stock in Europe." Since the school possesses an excellent stereopticon and a kinetoscope these last were easily appreciated by the children.

Up to September, 1911, this school was the ordinary one-room country school. At that time the Board of Education, composed of progressive farmers with modern homes, began to bring about this change. Taxes have increased and a wealthy stockman of the neighborhood has contributed largely from his private income, but the boys and girls are worth it. What this school will become is not

GROUP OF 5TH GRADE BOYS WORKING ON A HOTHOUSE, NEWMAN MANUAL TRAINING SCHOOL, NEW ORLEANS, LA.

yet evident for in so short a time it is barely possible to get things started. Those in charge are awake to suggestions and are working on plans to make this school answer still more fully to the needs of its community.

The National Education Association will hold its fifty-first annual convention July 5-12, at Salt Lake City. Those attending will be able to combine profit and pleasure to an unusual degree. The trip to Salt Lake City over any of the lines of travel is an ideal vacation trip in itself. Easily accessible from Salt Lake City are the Yellowstone National Park, and Glacier Park in Montana. The railroad rates are especially favorable for combining these park trips with the convention. The outing at Salt Lake may also be advantageously combined with a tour of California and the Pacific coast. Salt Lake City itself, is a favorite resort of the tourist, including natural and architectural features of rare attractiveness. The general meetings are to be held in the Mormon Tabernacle which seats 8,000 people comfortably. Places for departmental meetings have been arranged within a radious of five blocks of the Tabernacle, providing the best facilities available for such a meeting in the United States.

The program will be definitely announced early in June. Arthur L. Williston, principal of Wentworth Institute, Boston, is president of the manual training and art department of the convention. Manual arts teachers will also find much outside of their own section meeting to interest them. Five other conventions of educational interest are to be held at the same time in Salt Lake City, including the School Garden Association of America, and the National Committee on Agricultural Education.

George P. Hitchcock has been appointed assistant to Frederick B. Pratt in the administrative work of Pratt Institute, Brooklyn, and has been made vice-chairman of the general faculty of the Institute. Mr. Hitchcock was the last director of the Institute High School and all concerned are rejoicing in his return to the Institute. Mr. Hitchcock is a graduate of Amherst College. Shortly after his graduation he was asked to return to his home city, Fitchburg, Massachusetts, to become principal of the high school. From 1903 thru 1905 he was principal of the Institute High School, and from there went to Brookline, Massachusetts, as headmaster of the high school, where he has remained up to the present time. Mr. Hitchcock has studied, during this time, at the New York University, and law in Boston. He has been admitted to the Bar in Massachusetts. Mr. Hitchcock is actively connected with important educational organizations in Massachusetts.

A bill, which provided that pupils need not take manual arts subjects in the elementary schools if their parents filed written objections, was presented in the Massachusetts legislature in March. It aroused no little feeling, especially in Boston, where the protest against compulsory manual training first started. The bill failed of passage, largely on the ground that it would establish an undesirable precedent in the way of parental interference with progressive educa-

tional features. The promoters of the measure were opposed to manual training as not being "practical" as compared with the regular academic subjects! This appears amusing in view of the country-wide demand for manual training and vocational education to supply the "practical" elements lacking in the old established curriculum. The same word is used to describe two entirely different points of view.

Judging from newspaper accounts, the whole controversy in Boston originated in the insistence, on the part of some too-zealous teacher, on mat weaving as a suitable line of handwork for boys of grammar school age. It will be recalled that in a recent abortive attempt to have manual training dropped from the Chicago schools this same matter of mat weaving by older children was a focal point of criticism. While manual training, like other subjects, will never be altogether proof against hobby-riding teachers, it should be possible, thru careful standardization, to prevent much of such futile criticism.

MADE BY STUDENT IN YEATMAN HIGH SCHOOL, ST. LOUIS.

FOREIGN NOTES

By H. Williams Smith.

A veteran educationalist and a noted politician—Sir John Gorst—recreates himself in his old age by further educational experiments. In a recent interview he said:—"In my own school (in that part of England where he resides) I have introduced gardening and woodwork both for boys and girls, and we provide gardening and light woodwork tools. You remember the distinction made by the Germans between the 'book school' and the 'work school?' Well, I am all for the 'work school;' and the remarkable fact is that in my 'work school' the children are much cleverer at their books than they are at the 'book school.'" Here is a veteran statesman, father of a lately-deceased statesman,—Sir Eldon Gorst of Egyptian record,—who is an enthusiast for manual training. It is a good sign in a nation when its old men persist in youthful traits.

An article on "Practical Education and its Aftermaths" in *The Schoolmaster* is distinctly unfavorable to those developments in manual training which "have trodden on the corns" of the ordinary primary teacher. It contains the usual statements, i. e. "Manual instruction as a means to an end is excellent but manual instruction as an end in itself is to be avoided at all costs." It's a nice debatable point. "The mental side of human nature is of more importance than the physical." Oh! these sunderers of what God has joined together, they are the bane of education! "Let us have manual instruction in our schools by all means, but it must be strictly subordinated to the real work of education." You all know what the real work is, don't you? I have merely referred to this article as an example of the faint praise with which it is still sought to damn English manual training. *The Times,* in commenting upon an address by Sir J. A. Cockburn, says "Manual and mental education unquestionably help one another; but it is to be hoped that, in trying to remedy neglect of the first, educational theorists will not be led into the mistake of undervaluing the second. * * * Manual training is an excellent thing in its place, but it does not offer any royal road to education." I feel no concern about what the theorists will be led into: the men who are *making* manual training know what callouses on the hand feel like: there's no theory to deplore there. I'll give *The Times* time enough though. A year or two ago I do not think it was aware of manual training at all.

Mr. J. W. T. Vinall, chairman of the Information Bureau of the National Society of Arts Masters, lectured recently on "Art and Manual Training in the School." In effect he said that the more there was of both, and the more both were combined, the better. He averred also that "The scholar blessed

with creativeness and manual and artistic dexterity is to be ranked equally high with the mathematical or mental child." That sounds old to us, doesn't it?—but it is very new indeed to some people.

Mr. Albert Winfield, a Somersetshire teacher, is a very strong and able advocate of rural manual training, and what he says is heard over the whole of England. He pleads for "more practical work, not necessarily agricultural and gardening, excellent as these subjects are, but hand and eye training, simple cookery and housewifery within the school walls." Very modest, moderate demands!

The 16th annual Conference of the National Association of Manual Training Teachers was held in London at Easter and was addressed by a good number of prominent educationists. An excellent exhibition of handwork was held in connection with the conference. and a very good handbook was issued as a souvenir of the occasion. Subsequent discussion seems to have clung most round some remarks made by Mr. R. Blair, Education Officer, L. C. C., at the public meeting, which have been taken by many as hostile to manual training. But I feel sure that Mr. Blair, holding such a position as he does, and acting in it as he has done, does not undervalue manual training. In his speech he asked some rather irritating questions, bearing almost wholly on the utilitarian side of our work, but I think the best plan for the teachers will be to answer those questions as soon as possible, and then request Mr. Blair to ask some more.

The Minister for Education has submitted proposals to the Legislature Council of India for establishing a broader basis of education by special grants for hotels, school hygiene and manual instruction, costing two lakhs of rupees.

The second International Congress on the teaching of domestic subjects is to be held at Ghent, Belgium, from June 15 to 17. The Association of Teachers of Domestic Subjects is sending delegates from England.

The Department of Education for the Cape of Good Hope is offering prizes for competition among the pupil teachers of native training schools where school gardening is being carried on. Classes in woodwork and cardboard modelling with the related drawing are being very successfully carried on at Cape Town. These classes are free to all teachers in State-aided schools.

The Superintendent of Education at Swansea, Wales, reported to the Education Committee that a number of parents objected to their children taking domestic subjects, saying that they could teach them cookery and laundering at home. It was felt, in order to put a check on their attitude, that a test case would have to be taken, so that parents might know that they had no right to withdraw their children from those subjects any more than others. It

was decided that the next parent responsible for withdrawing a child should be prosecuted.

Miss Mahon in her presidential address to the Irish National Teachers' Organization was unsympathetic towards manual occupations in the schools. This attitude of mind is not the right one in a person who should know that manual training is likely to be one of the best things to change matters for the better in "the most distressful country."

The Educational News of Scotland says:—"Practical subjects have pushed themselves into the classroom to a degree which to some people spells danger. Yet there they are, and there they are likely to remain. * * * Scotland has, with some quite explainable reluctance, come into line generally in the matter of the curriculum of its day schools with the practice of other countries in giving increased prominence to practical training of the hand and eye, and of adapting the general scheme of work to meet the change." It is inconceivable that when any good thing is going, a Scotsman should abstain from participating. They were rather reluctant at first, but now it's there it's going to remain. Oh yes, Scotland's all right!

The handwork teachers of Scotland have hitherto belonged to one of two bodies: The Scottish Association of Manual Training Teachers and the Scottish Sloyd Association. It is hoped to merge the two associations in one, to be called The Educational Handwork Association of Scotland. They deem the words "Educational Handwork" to explain more to the lay mind than either "Manual Training" or "Sloyd." May be! May be not!

Dorsetshire Education Committee recommends the gradual introduction of the manual method of teaching into its rural schools (a) by obtaining and spreading information as to the best examples that are to be found in various parts of the country, (b) by giving every encouragement and freedom to capable teachers who are willing to try the method, (c) by providing classes for the training of teachers for this special purpose, or by giving facilities to teachers to attend such classes as already exist.

Nottingham has sixteen centres which have been made thoroly adequate. There is a model house, where housewifery is taught in all its branches, and to this has lately been added a model flat. The equipping of a housewifery centre costs the city £120, while upkeeps and salaries account for another £120 to £140 per annum.

At Cowes, the headquarters of the Royal Yacht Club, the experiment of teaching boys cooking has been such a success that the authorities are intro-

ducing it elsewhere. The Chairman of the Isle of Wight Education Committee says the boys have fairly beaten the girls at cooking.

In opening a new domestic subjects centre at York, Miss E. P. Hughes, a Welsh educationist, advocated the widening of the curriculum by teaching the girls woodwork, and even bootmending. Mrs. Edwin Gray, ex-president of the National Union of Women Workers, said, whether a woman had a lot of servants or none at all, domestic science and practice were a necessity.

An exhibition of the work done by the children attending Leyland Infant's School, Lancashire, was held recently. The display consisted of basket work, clay modelling, wood-carving, paperwork and needlework, and it included a model of a railway station complete to freight and passenger trains, and a model of their own school: both models being prepared by the children. Miss Isabel Thwaites, the Head Mistress, is widely known for her efforts in school handwork experiments.

That marvelous movement, the Boy Scouts, bids fair soon to set the pace in education by doing things. At a Manchester school 200 scouts, representing 19 troops, have enrolled for special purposes, one of which is practical geography, including surveying with the Ship Canal as a base. Employers in Manchester are recognizing the value of the "badges" which scouts obtain and filling their vacancies accordingly. In Leeds special classes for Scouts in ordinary subjects are held, and they are enabled also to qualify for the carpenter, handyman, pathfinder, prospector, strawman and surveyor badges. At Workshop where, in the past, the evening schools have met with very small success, a new scheme to take in the Scouts promises well. In Surrey 12 centres gave instruction to Boy Scouts in gardening, woodwork, ambulance work, electricity and engineering. General Baden-Powell already takes a place in the front rank of world educators, past and present.

An interesting experiment in the training of school girls is being tried at St. Phillip's School, Hulme, Manchester. A small house has been rented and furnished by the managers close to the school, where the girls can be taught housewifery. A fully qualified teacher lives on the premises and conducts the classes.

A debate has been held at the National School of Cookery, London, on "Gas versus Electricity in Cooking." An expert spoke on behalf of each form of heat energy; and electricity obtained one-third more votes than gas in its support.

Nothwithstanding strong protests from the advocates of pure education, (whatever that is) cobbling classes are on the increase in schools of London's poor districts.

The London County Council ophthalmologist says that children suffering from a high degree of myopia should attend classes where all oral work can be taken in association with normal sighted children, that all literary work can be learned without books, pens or paper, and a very full use should be made of every sort of handicraft that would develop attention and skill with a minimum use of the eyes.

A feature of the Boys' Day Department of the Shoreditch Technical Institute is the centre established for training teachers of manual subjects. In addition to the practical training in handicraft, the students receive instruction in elementary science, mathematics, applied art work, English, and in the science and practice of teaching. The course is for four years' training, and ten students are admitted each year by scholarships awarded on the results of a competitive examination. This is, I believe, the only centre of its kind as yet established in England.

For a number of years the School Board of London (now defunct) held exhibitions of art and manual training, which the L. C. C. allowed afterwards to drop. Exhibitions are unreliable assets of education; they may easily be hindrances as well as helps. I will speak plain: they should be irreproachably honest: the exhibits should be the work of children only. One of the most patently straightforward shows of recent years has just closed at Whitechapel. It was devoted entirely to Handwork from the Kindergarten to the toys class of the elementary school, and with very few exceptions was obviously prepared by the children. It was the kind of exhibition I should like to see repeated.

Mrs. Humphrey Ward has done something better than writing novels: she has promoted and encouraged the London play centres for poor children. The largest play centre in the Metropolis is the Jewish centre in Middlesex Street (old Petticoat Lane, renamed) one of the most thickly populated of urban areas. Here hundreds of boys and girls are kept off the streets after school hours and provided with recreation in the shape of useful crafts and nice games. Woodwork goes strong in these play centres, which are held in school buildings, and several manual teachers are doing good work in this connection.

A special requisition list of apparatus and material for use in connection with handwork in the lower classes has been approved by the L. C. C. Four hundred school departments have been granted permission to take up this kind of work. With the list will be issued a pamphlet containing hints as to the care of tools, the best method of keeping and preparing modelling clay, etc.

The Board of Education (for England and Wales) is gratified to note a continued increase in the number of centres and schools where instruction in special subjects is given, and in the number of scholars receiving such

instruction. The subjects taught and the number of registered scholars in each are as follows:—Cookery, 327,632 scholars; laundry work, 133,995; housewifery, 28,731; combined domestic subjects, 8,379; dairy work, 180; handicraft, 239,653; light woodwork, 2,100; gardening, 39,531. These figures relate to 1910-11, but the number of centres for 1911-12 is given as follows:—cookery, 1,987; laundry work, 673; housewifery, 194; combined domestic subjects, 95; dairy work, 10; handicraft, 1,038; light woodwork, 4; gardening, 21. These show in some cases a large increase over the preceding year—135 new cookery centres; 65 laundry, 72 housewifery, and 88 handicraft centres.

In Volume 4 of the Annual Reports of the London County Council, the Education Officer's chapter on elementary education gives first place to the subject of handwork. The greater portion of the report consists of a memorandum by Mr. P. B. Ballard, M. A., a district inspector who takes great interest in the subject, and who is recognized as one of the best exponents of manual training in England.

London manual teachers have had their salary maximum raised from £155 to £175. It is not enough, but it is something.

In London schools accomodation for cookery is lacking at 298 schools, for laundrywork at 412, for housewifery at 512, for woodwork at 351, while only 13 metalwork centres have up to the present been provided in council schools. A total number of 1,200 additional centres are still required. The additional capital cost of providing these 1,200 centres, not including expenditure on the acquisition of sites, would be not less than £900,000. To equip these centres would cost £80,000; and to pay the salaries of the additional teachers over £150,000 would be needed yearly. A Dreadnought battleship costs £2,000,000 and gets out of date in ten years. I am afraid the Dreadnoughts come before manual training centres in the nation's conisderation.

REVIEWS

School and Home Gardens by W. H. D. Meier; Ginn and Company; 5½x8 inches; pp. 319; price 80 cents.

The special value of this new book on gardening is its definiteness of directions and its recognition of the limitations of school conditions. The author takes it for granted that the reader is in favor of school and home gardens, and so wastes no time in theorizing or pleading a cause. The first chapter tells exactly how to make window gardens, the second tells how to grow plants in pots, and so on, each chapter being a definite description of just how to get results in some phase of school or home gardening. Careful diagrams, abundant and helpful half-tones, tables for planting, and illustrated garden plans supplement the text in making this a highly commendable handbook for teachers and amateur gardeners. The author is a biologist and school gardener of many years' experience, being head of the department of biology and school gardening at the State Normal school, Framingham, Massachusetts.—V. E. W.

Art for Life's Sake by Charles H. Caffin; the Prang Company; 5x7½ inches; pp. 287; price $1.25.

Occasionally there appears a book which expresses clearly and forcibly what a large number of people have been feeling more or less inarticulately for a long time. Such a book is "Art for Life's Sake," a book of broad scope, of careful logic, of informational value, and of high ideals. It shows the relation of art to life in the past and how it may be more closely and helpfully united with real life in the present. The author skilfully satirizes the so-called artists who believe in Art only for Art's sake. The ultimate aim of the book is to "further the getting together of each and all, no matter what may be their specialized work, in an organized cooperation, animated by the ideal of individual and collective betterment." Thus the book is seen to have a broad message for the general reader, as well as a special message for the artist in colors, stone, metal, wood or other medium. To the latter he holds up a high standard, saying; "Hence the proud distinction of the artist proper, if he understand himself aright and be rightly understood, is to hold aloft the ensign to humanity, pointing the way to nearer and nearer approaches toward perfection." It is impossible in a brief review to further suggest the character of the subject matter of a book such as this, but the reader may be assured that his ideas about art will be clarified and his efforts toward human betterment will be given renewed impulse by close study of the chapters of this book.

Design and Construction by Arthur H. Chamberlain, Nelbert Murphy, and Alfred Guillou; Whitaker and Ray-Wiggin Co., San Francisco; 8x11 inches; pp. 54; paper covers, price 35 cents.

This is an attractively made book, illustrated with three plates in color, and numerous half-tones and line drawings. The chief value of the book lies in

these illustrations, since the accompanying text is too brief and indefinite to be very helpful. As a supplement to a serious study of the principles of design and construction, used by students with considerable experience with the materials to which the designs are applied, the book will be welcomed by teachers who seek an inexpensive collection of commendable designs. The authors make acknowledgement to Ernest A. Batchelder, whose influence is plainly seen in the designs.—V. E. W.

Annual Magazine Subject—Index, 1912, Edited by Frederick Winthrop Faxon. Published by the Boston Book Company, Boston, Mass. 9½x7 inches, 299 pages.

This is the fifth annual volume covering a selected list of American and English periodicals. Owing to the suspension of the publication of Poole's Index this volume will seem to have greater value than ever before, though it still considers its special field to be in history, travel, mountaineering, exploration, forestry, outdoor life, the fine arts, and architecture. However, the general field, which is not neglected, includes articles on education.

The book is printed on heavy paper, with wide margins for possible notes, and is well bound.

RECEIVED

Report of a Conference on the Teaching of Handicraft in London Elementary Schools. London County Council. Can be purchased from P. S. King and Son, 2 and 4 Great Smith street, Victoria street. Westminister, S. W. London, England. Price 7 d. This is the much-discussed report of the Conference of which Mr. Shadrach Hicks, Principal of the Shoreditch Technical Institute was chairman.

Correlation of the Textile Phase of Industrial Work in the Elementary Schools. A chart published by the School of Practical Arts, Teachers College, N. Y. Price 20 cents. A scheme of work used in the Speyer School.

Studies in Construction, by Louis C. Peterson, the January number of the Normal School Bulletin, published at the Southern Illinois State Normal University, Carbondale, Illinois. This is an effort to make clear to persons without technical training the principles and formulas concerning the deflection of beams under different loads, the trussing of beams, and the strength of floors and roofs.

School of Fine and Applied Arts, State Normal School, Milwaukee, Wisconsin. Catalog for 1912-13. A very attractive illustrated catalog of a school offering excellent facilities for the study of art with reference to teaching. A manual arts course has been added during the past year with Edward Ray Tompkins in charge of the woodworking.

The Importance of Art Museums in Our Smaller Cities. By Robert W. DeForest. Reprint of a paper in Volume X of the American Art Manual, edited by Florence N. Levy and published by The American Federation of Arts, 215 West 57th Street, New York City.

Sloyd Training School. The announcement of the twenty-fourth year of the school established by Mrs. Quincy A. Shaw of which Gustaf Larsson has always been principal. This circular gives illustrations of some of the newer courses in the school; for example, forging, wood-turning, bookbinding and designing.

Report of Board of Education, Louisville, Ky. A comprehensive report including that of the supervisor of manual training and domestic science, Louis A. Bacon, and of the supervisor of industrial work, Miss Sarah Logan Rogers; also the report of the manual training high school.

Occupations and Industrial Work. Outlines used in the first six grades of the public schools of Louisville, Ky. under the supervision of Miss Sarah Logan Rogers. These include details of equipment, materials, aim, and processes.

The Montessori Method. An exposition and criticism by Dr. S. A. Morgan, principal of Normal School, Hamilton, Ontario. Published by L. K. Cameron. Toronto. A bulletin of the Ontario Department of Education.

Lathrop Industrial School. An account of the new prevocational public school in Kansas City, Mo. of which Clarence A. Blocher is the principal. It contains outlines of courses of study.

Agricultural Instruction in High Schools. By C. H. Robison and F. B. Jenks. Bulletin No. 6, 1913. Published by the United States Bureau of Education, Washington, D. C.

Elementary Manual Training. The 1913 Syllabus of the courses and examinations for teachers' certificates in the Province of Ontario. Ontario Department of Education, Toronto. Similar pamphlets are issued for art and household science.

Addresses and Proceedings of the National Education Association 1912. Durand W. Springer, Secretary, Ann Arbor, Michigan. Price, $2.00. This report of the Chicago meeting contains 1427 pages. About 100 pages are given to the report of the Department of Manual Training and Art Education.

Partial Course of Study, Public Schools, Los Angeles, California. A pamphlet of forty pages outlining and illustrating the work in drawing, manual training, primary manual arts and home economics.

Ornamental Trees and Shrubbery. Arbor Day Annual 1913. Compiled by George Martin Wiley. Published by the Education Department, Albany, N. Y. A beautiful pamphlet quite in harmony with previous annuals from New York.

Wisconsin Arbor and Bird Day Annual, 1913. Compiled by O. S. Rice. Issued by C. P. Carey, State Superintendent of Public Instruction, Madison, Wis. A book of 109 pages full of facts and inspiration for nature lovers and students.

Pennsylvania Arbor Day Manual, 1913. Nathan C. Schaeffer, Superintendent of Public Instruction, Harrisburg, Pa. Contains many poems and songs for arbor day celebrations as well as some scientific articles.

FIELD NOTES

The next meeting of the National Society for the Promotion of Industrial Education will be held at Philadelphia on the 5th, 6th, and 7th of December.

R. A. Kissack, of St. Louis, has been appointed director of manual training and domestic science for the city schools. This is a new position in the St. Louis schools, and one which is designed to increase the efficiency of those departments. Mr. Kissack has been connected with the manual training work in the high schools of the city for a number of years.

Orin F. Evans has been appointed head of the manual training department of the California State Normal College at San Diego. Mr. Evans is a graduate of the Michigan Normal College and of Albion College. He has had experience in teaching in various schools of Michigan.

In the past three years, 82 new kitchens have been added to the Chicago schools.

There are three important additions to the faculty of the Department of Manual Arts of Bradley Polytechnic Institute this year. Ira S. Griffith, formerly professor of mathematics at Eureka College and for the past nine years director of manual training at Oak Park, Ill., takes a newly created position and is given the title of assistant professor of manual arts. He will give instruction in pedagogy, both general and special, and will be principal of the new vocational school. Professor Griffith is most widely known as the author of books on woodworking and as a writer for technical journals, but locally he is known as a most successful teacher of boys. John R. Frazier instructor at the Rhode Island School of Design in Providence becomes the instructor in freehand drawing and painting in the place of Miss Mary C. Scovel who has gone to a similar position at the Handicraft Guild in Minneapolis. Franklin G. Elwood takes another new position as instructor in architectural drawing. He is a graduate of Syracuse University in the department of architecture, with subsequent practical experience in professional work.

(Continued on p. XV)

THE FIRST AMERICAN SAW STEEL

The great and powerful place which American steel has assumed in the world is all the more remarkable when it is considered how hard was the early struggle to give it standing. Yet in the face of every adverse condition the industry has developed and grown and today it cannot be successfully contradicted that America is not only the largest and most critical consumer of steel in the world, but also the greatest producer as well, and this despite the fact that some years ago the entire country sent abroad for all its steel.

This is true, not only of rails, plates, structural steel, wire and the commoner grades of steel, but also of the higher grades of steel such as Tool steel and Alloy steels.

At the present time Henry Disston & Sons use a greater quantity of tool steel annually, for saw-making purposes, than any other single American manufacturer, and all of it is produced in their own plant. The history of this plant is unique because it is the first successful crucible steel melting plant in America to make saw steel.

The fact that saw manufacturers were forced to secure all their steel plates from abroad, and these seldom free from flaws, led Henry Disston in 1855 to establish his plant for producing special saw steel. His extensive and careful study of the problem, together with much costly experimenting, resulted in the production, not only of the first saw steel made in America, but the first really perfect saw steel made anywhere.

So great was the prejudice, however, against American steel that Henry Disston was compelled to conceal for a time the fact that he made his own steel, but it was not long before its good quality became known.

Demand on the part of the lumber manufacturers for increased output caused untold difficulties for the saw manufacturer. Forcing results in the saw mill necessitated the making of a steel which would withstand the much greater strains and at the same time possess a longer life. Since its inception, Disston Saw Steel has kept pace with the increasing requirements of the lumber manufacturers so that it possesses, today, all the qualities necessary to make it the best steel for saws produced anywhere in the world.

Disston not only made the *first* American saw steel, but to Disston steel is due the present high standing of American Saws throughout the world.

Quality Tells

HENRY DISSTON & SONS

INCORPORATED

KEYSTONE SAW, TOOL, STEEL & FILE WORKS

PHILADELPHIA, U. S. A.

REPRINTED FROM
THE DISSTON CRUCIBLE
OF MARCH, 1912.

FIELD NOTES

(Continued from p. XIII)

Miss Jessie Field has accepted the position of superintendent of rural work for the National Young Women's Christian Association. Miss Field has become very well-known thru her work in developing the rural schools of Page County, Iowa. One of her latest activities is the organization of a boys' good roads contest.

E. W. Christy succeeds F. H. Ball in Cincinnati. Mr. Christy has been a member of the manual training force of teachers in Cincinnati for some time. He will endeavor to continue the work in the lines laid out by the previous administration. In pursuance of previous plans the third year high school pupils will have co-operative courses this year.

Carl Menhennick is a new member of the staff of manual training teachers at Central High School, Grand Rapids, Mich. Mr. Menhennick's preparation for teaching has been made in accordance with a special plan, advocated by the principal, Jesse B. Davis. After graduating from Central High, Mr. Menhennick spent a whole year in actual work in Berkey and Gay's furniture factory, taking work in every department. He then went to Teachers' College, Columbia University and studied manual training. He thus combines the practical and the theoretical in his preparation, a condition which many administrators in manual arts work are now considering as the ideal.

LaCrosse, Wisconsin, has received a gift of $70,000 from Frank P. Hixon for the purpose of establishing a manual training school.

J. F. Cannon, formerly supervisor of the manual training in the Oshkosh high school, in Wisconsin, is to be the head of the Orville Beach manual training school in Oshkosh.

Anaconda, Montana, has a department of manual training this year. Ernest E. Heuser who is director, is supervising the installation of equipment. Mr. Heuser came to Anaconda from Pocatello, Idaho, where he supervised manual training the past two years.

John Tonkin is the new principal of the manual training school at Waltham, Massachusetts. Mr. Tonkin goes to Waltham from the New Hampshire State College at Durham, where he had charge of the industrial department.

(Continued on p. XVII)

FIELD NOTES

(Continued from p. XV)

Miss Catharine Hopkins fills the position in drawing and design at the Southwestern Louisiana Industrial Institute.

Harrison Paul Brown became supervisor of art and manual training in the Berwyn, Illinois, schools in September.

Miss Abbie-Lowell Maury is the instructor in crafts in the Gilbert, Minnesota, high school.

Manchester, New Hampshire, is to have a new manual training school.

Manual training and domestic science were introduced into the schools of Millville, New Jersey, in October.

The Frank P. Hixon gift to the La Crosse, Wisconsin, schools for a manual training department has been increased from $70,000 to $90,000.

Manual training and domestic science will be made prominent features of the work at the new Kennedy Heights school, near Cincinnati.

Manual training and domestic science have been introduced into the schools of Central Falls, Rhode Island. H. S. Stockwell, of Fitchburg, Massachusetts, is the instructor for the new courses.

The high school manual training department in Carthage, Missouri, has recently installed new equipment to the value of $1,100. The department is in charge of a new supervisor, Bruce Richards.

Allen G. Backus, of Salt Lake City, is the new director of manual training at Scottdale, Pennsylvania.

E. C. Beezley, instructor in manual training at El Paso, Texas, last year, is now in the Detroit schools.

Ralph S. Stevens, of Denver, is teaching manual training at Sterling, Colorado.

(Continued on p. XIX)

FIELD NOTES

(*Continued from p. XVII.*)

The manual training high school of Brooklyn, New York, celebrated its nineteenth anniversary February 19th. Charles D. Larkins has been principal of the school since its founding. Its attendance has increased from the original 125 to the present enrolment of 3,512.

The Manual Training High School of Indianapolis, celebrated its eighteenth anniversary on the 18th of February. In outlining the history of the school Milo H. Stuart, the principal, paid tribute to the memory of Charles Emmerich who was principal of the school for fifteen years.

Thomas Fisher, head of the manual training department in the Lowell, Massachusetts, public schools, was recently elected to the position of principal of the Lowell Industrial School, succeeding W. H. Dooley. Charles E. Seede was advanced to the position in the high school made vacant by Mr. Fisher.

In the Brownell School in Cleveland, Ohio, the entire school work of the children centers round the furnishing of a model home. All academic work is so carefully mingled with the manual training work that the pupils are unaware that they are being instructed in the subjects they once disliked. This school is conducted for the benefit of such pupils as seemed to be unable to keep up to the standard of the regular elementary school, and the perseverance and enthusiasm of these pupils under the new system would indicate that method of instruction rather than mental capacity had been at fault in their previous schooling.

Charles Obold, who has been for several years a teacher in the Mount Penn Public Schools, accepted a position as instructor for the sixth grade manual training in Reading, Pennsylvania. Mr. Obold received his education in industrial work at the Keystone State Normal School, and Teachers College, Columbia University.

The manual training students in the high school at Salina, Kansas, are to build bleachers in the school gymnasium to accommodate a hundred people. Another form of productive work for the schools being done by the manual training department, is the framing of an assortment of pictures recently purchased for the schools.

(*Continued on p. XXI.*)

FIELD NOTES

(Continued from p. XIX.)

Two finely equipped drawing rooms were opened in February for the use of the students of the Boys High School, Reading Pennsylvania. These rooms are in the grade school building recently given over to the technical work of the high school. This city is unusually fortunate in having a building within half a square of the school that could be conveniently changed to accommodate all the shop courses.

The manual training and mechanical drawing departments of the Edgewood School, Edgewood Park, Pa., are conducted by E. C. Houston. Mr. Houston, who is a graduate of the pattern-making department of the Carnegie Institute of Technology, was an instructor in manual training in a private school at night, during his last year at the Institute. The work in both departments in Edgewood extends thru the fifth, sixth, seventh and eighth grades and the high school.

The department of manual training in the schools of Mitchell, South Dakota, has been extended during the past year. A two-year course in domestic science has been added to the high school and both domestic science and manual training courses have been placed in the grammar grades.

READER'S GUIDE TO THE MAGAZINES.

* Illustrated.

Hall Stands—Design and Construction, John Bovingdon, *Wood Craft,* Feb., p. 133. *

Handwork and Architecture, G. R. Chadwick, *Educational Handwork,* Dec., p. 215.

Handwork as an Educational Instrument, P. Green, *Educational Handwork,* Dec., p. 214.

The Hand Loom and Some of its Uses, Frank P. Lane, *School Arts Magazine,* Jan., p. 326. *

Hand Printing in the Schoolroom, P. J. Lemos, *School Arts Magazine,* Feb., p 365. *

The Home Vegetable Garden, Frank A. Waugh, *Woman's Home Companion,* Mch., p. 16. *

How to Make a Doll House, Katherine Pyle, *Youth's Companion,* Jan. 23, p. 49. *

How to Make a Music Stand, Ira S. Griffith, *Am. Carpenter & Builder,* Mch., p. 94. *

How to Make a Silver Cream Pitcher with an Octagonal Base, Augustus F. Rose and F. W. Marshall, *School Arts Magazine,* Feb., p. 398. *

An Inlaid Puzzle Box, *Wood Craft,* Feb., p. 137. *

Light Woodwork, P. Baxendale, *Educational Handwork,* Feb., p. 6. *

The Literature of Typography, II, Bibliographies of Printing, Henry L. Bullen, *Inland Printer,* Mch., p. 836.

The London County Council Report on the Teaching of Handicraft, H. Holman, *Educational Handwork,* Dec., p. 209.

The London County Council Report on the Teaching of Handicraft (*Continued*), H. Holmes, *Educational Handwork,* Jan,. p. 233.

Mechanical Drawing—Stair Construction, H. L. Jones, *School Arts Magazine,* Jan., p. 323. *

Mechanical Drawing—Moldings, H. L. Jones, *School Arts Magazine,* Feb., p. 393. *

A Model Glider, C. H. Ince, *Educational Handwork,* Feb., p. 3. *

Model Small Woodworking Shop, *Am. Carpenter & Builder,* Mch., p. 96. *

New Crochet for the House, *Ladies' Home Journal,* Feb., p. 31. *

The New Old-Fashioned Cross-Stitch, R. H. M. Fillbrown, *Woman's Home Companion,* Mch., p. 49. *

An Old Irish Settle Bed, F. North, *Wood Craft,* Jan., p. 103. *

Picture Framing and Hanging, II, Mabel J. Chase, *Shool Arts Magazine,* Jan., p. 331. *

Planning and Mounting an Exhibit, George W. Eggers, *School Arts Magazine,* Mch., p. 488. *

The Possibilities of the Pencil, Florence I. Goodenough, *School Arts Magazine,* Jan., p. 291. *

Practical Crocheted Table-Mats, Helen Marvin, *Woman's Home Companion,* Feb., p. 29. *

Primitive Industries: Habitations, A. H. Quiggin, *Child Life,* Jan., p. 21. *

Printing Photographs Direct from Wood Sections, *Wood Craft,* Jan., p. 101. *

Prize Pieces of Carpentry and Cabinet-Making, *Am. Carpenter & Builder,* Mch., p. 70. *

* Illustrated.

READER'S GUIDE TO THE MAGAZINES.—CONTINUED.

Proceedings, Eastern Art and Manual Training Teacher's Association, Baltimore, May 14-16, 1912:

The Opportunity of the Manual Arts Teacher, W. C. A. Hammel, p. 15.

The Correlation of Manual Training and Industry, E. R. Jackson, p. 22.

The Relation of Design Teaching to Home Decoration, Raymond P. Ensign, p. 42. *

Applied Design in Elementary Schools, Mary B. Hyde, p. 59.

Demonstration Drawing, James P. Haney, p. 73.

The American Dresden Exhibit, James F. Hopkins, p. 79.

Present Problems in Art Teaching, Hugo B. Froehlich, p. 89.

What of Manual Training? E. E. Mac Nary, p. 100.

Japanese Prints and Their Service to Art Education, Katherine M. Ball p. 104.

Color and An Eye to Discern It, A. H. Munsell, p. 108. *

Report of the Delegate to the American Federation of Arts, Mary S. Garretson, p. 140.

The Pupil's View of Drawing, Morris Greenberg, *School Arts Magazine,* Feb., p. 358.

A Salad Set in Tree Design, Elizabeth Mackenzie, *Woman's Home Companion,* Mch., p. 45. *

School Handwork, Robert F. Wootton, *Educational Handwork,* Dec., p. 210. *

School Handwork: Bridges, R. F. Wootton, *Educational Handwork,* Feb., p. 18. *

A Short Cut in Mitering, C. M. Allen, *Wood Craft,* Feb., p. 143. *

Sideboard and Serving Table, Ira S. Griffith, *Am. Carpenter & Builder,* Jan., p. 52. *

Table Lamp, and Combination Settle and Table, Ira S. Griffith, *Am. Carpenter & Builder,* Feb., p. 64. *

Taking the First Steps, David F. Lincoln, *School Arts Magazine,* Jan., p. 281. *

Thinking in Three Dimensions, Henry T. Bailey, *School Arts Magazine,* Mch., p. 439. *

Three New Crocheted Bags, Helen Marvin, *Woman's Home Companion,* Mch., p. 39. *

A Three-Stick Kite, *Youth's Companion,* Mch. 6, p. 128. *

Timber and Its Structure, James A. Weale, *Furniture Mfr. & Artisan,* Feb., p. 86. *

Toy-Making for Little Children, M. Swannell, *Child Life,* Feb., p. 51.

Useful Stands and Tables, John D. Adams, *Woman's Home Companion,* Feb., p. 31. *

The Year's Progress Among American Craftsmen, *Craftsman,* Feb., p. 580. *

* Illustrated.

TRADE NOTES

New ideas are springing up every now and then in the manual training equipment trades as well as in school teaching. The "Exchange Certificate" given by Rohan & Rohan of Racine, Wis., with their sets of drawing instruments is one of the latest we have noticed.

The largest manufacturer of woodworking machinery in the world is said to be the Berlin Machine Works, with headquarters at Beloit, Wisconsin, and a Canadian plant at Hamilton, Ontario. This company issues a book, "Berlin Quality," which they are glad to send to teachers of manual training.

For compactness the Universal Woodworker made by the Sidney Tool Co., Sidney, Ohio, seems to hold the record. It is a circular saw, jointer, bandsaw and boring machine all in one, and the whole machine occupies but little more space than one machine of ordinary size. Their new catalogue will describe and illustrate it in detail.

To devise anything very new in the design of a six-inch rule graduated to 64ths seems almost impossible, but the Lufkin Rule Company have done it. Their "Allen Improved Scale" will measure 64ths without having the lines too close together, as is usual on a scale. This is accomplished by putting the even number of 64th—the 32nds, sixteenths, eighths, etc.—on one side of the rule, and the odd number of 64th on the opposite side. This makes it possible to number each graduation mark, and by making each second graduation mark slightly lower than the ones before and after it, the figures can be put on in two rows. This allows them to be large enough to be easily read. The purpose of this rule is to reduce eye strain as well as insure accuracy of measurement.

BOOK NOTES

Anyone who has been watching the development of some of the newer kinds of handwork as they have been coming into the schools must surely have observed the steady growth of printing as a school subject. This growth would be more rapid if there were more teachers who are also printers. Two of the difficulties in the way of progress of printing have been (1) the lack of teachers, and (2) lack of organized courses of instruction. It is easy to get some type and let the boys set up a few paragraphs, and then run them off on a small press, but that is not teaching printing; that is not putting printing on a sound educational footing; it is not giving it a fair chance with other handwork subjects. To place printing on the right basis educationally, the fundamentals of the art must be well taught, and taught in harmony with recognized commercial standards. We believe this is essential. To accomplish this the course of instruction must be organized by a man who is a printer as well as a teacher. Realizing the importance of setting such a high standard at this early stage in the development of school printing, the Manual Arts Press will publish within a few weeks a book entitled "Practical Typography" which we believe will at once be recognized as a book of superior value. We believe that it will set the standard that is needed. The book has been prepared by George E. McClellan, Instructor in Printing at the Lakeside Press School of Printing in Chicago. The great success of that school has been due in no small measure to Mr. McClellan's analysis and organization of the subject-matter of printing with reference to both practical and school conditions. The system worked out by him has already been adopted in several apprentice schools and in public schools, and it has met with marked success. The essential feature of the course is that in the early stages a student sets up in type a description of what he is doing with his hands. In a double sense therefore he is learning by doing when following Mr. McClellan's course. Moreover, he is following a course that has lead students to the highest standards in the craft.

In the manufacture of this book the aim is to produce a work every page of which will be an example of what the book teaches.

The Century Company of New York has just published a manual training and industrial supplementary reader which we believe is going to meet a real need. It gives the history of the evolution of many of the inventions most useful in daily life in a compact and interesting form, accompanied by many illustrations. As a reader for pre-vocational classes it seems to be just what many teachers have been looking for, and as a supplementary reader for home and school use it is sure to be appreciated. The book is entitled "Stories of Useful Inventions." Its author is Dr. S. E. Forman.

Among the art crafts that have come into school work, leather work is one of the most popular because its technique is so simple, the equipment inexpensive, it is such an excellent means of stimulating good design, and the results of the work are so pleasing. Yet with all this leaning toward the craft of leather work there has been no American book supplying just the help that the teachers and craft workers have needed—no book classifying the types of leather work and describing in detail the processes of each type. To meet this need the Manual Arts Press has just issued a convenient manual written by Miss Adelaide Mickel, Instructor in Design at Bradley Polytechnic Institute. This book treats the subject matter under the following heads:—Equipments, flat modeling, embossing, carved leather, cut work, and staining. Then it describes in detail the processes of making several typical models, such as a card-case, a bill-book, a coin purse, a hand-bag, opera-bag, etc. At the end of the book are lists of problems suggested for grades five to eight of the elementary school, a list for high schools, and working drawings of problems. More than half of the space in the book is given to illustrations, both photographs and line drawings. It is printed on high grade enamel paper and bound in a heavy leather-brown paper. The book contains many excellent designs, but its chief value lies in its clear but brief descriptions of processes. It tells just how to do leather work. It answers "the thousand-and-one questions" asked by beginners in the craft and by some older workers also.

OUR APPROVED LIST
OF BOOKS ON THE MANUAL ARTS

ONLY such books as are recommended by the Editor of the MANUAL TRAINING MAGAZINE appear in this list, and the aim will be to keep in the list the best books on the subjects treated. For a more complete list see our catalog, "Books on the Manual Arts". This catalog lists and describes all of the standard and the best of the recent books. A copy will be sent free to any address on request.

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1. THEORY, PEDAGOGY, GENERAL.

Handwork Instruction for Boys. By ALWIN PABST. Our price, postpaid $1.00

A remarkably clear and stimulating book on the development and principles of manual training by the director of the training school for teachers in Leipsic, Germany. Translated by Bertha Reed Coffman.

Hand and Eye Training. By WOLDEMAR GOETZE. Our price, postpaid 1.50

An English translation of a notable German book on the history, principles and practice of manual training.

Economics of Manual Training. By LOUIS ROUILLION. Our price, postpaid 1.50

The only book treating comprehensively the cost of equipment and maintaining manual training schools.

Manual Arts for Vocational Ends. By FRED D. CRAWSHAW. Our price, postpaid .... .85

A strong and convincing plea for the development of the present school machinery to serve the ends of vocational education.

2. WORK FOR GIRLS.

Handicraft for Girls. By IDABELLE MCGLAUFLIN. Our price, postpaid 1.00

A handbook for teachers, detailing a five-years' course in sewing for girls in the public schools. Chapters on stitches, fibers and fabrics, cloth and cardboard construction, basketry, dress in its relation to art, and home furnishing. With many illustrations. An excellent book—thoroly practical.

A Sewing Course. By MARY SCHENCK WOOLMAN. Our price, postpaid 1.50

A course of study, description of stitches and instruction in methods of teaching by the head of the Domestic Arts Department, Teachers College, New York City. (Interleaved Edition, $3.50).

Educational Needlecraft. By MARGARET SWANSON and ANN MACBETH. Our price, postpaid 1.35

The best book yet produced combining art and needlework in school problems. A course of study illustrated with numerous line drawings, wash drawings and color plates

Textiles and Clothing. By KATE HEINTZ WATSON. Our price, postpaid 1.50

About half of the book is given to the origin and methods of working textile materials, and the remainder to sewing and dressmaking. Richly illustrated, especially the part on textiles. A valuable textbook for high schools or reference book for teachers. (Textbook Edition, $1.25).

Elements of the Theory and Practice of Cookery. By MARY E. WILLIAMS and KATHARINE R. FISHER. Our price, postpaid 1.00

This book combines the features of a working guide for the kitchen laboratory with those of a handbook for study and reference.